A BRITISH TROPHY IN HONOUR OF Linnæus

Tomkins fcr. *Cooper fculp.*

ROBERT JOHN THORNTON, M.D.
Public Lecturer on Medical Botany.

Elmes, Archt. del.t — W. Woolnoth, Sculp.t

Entrance into that most noble Public Charity and admirable Medical Establishment Guys Hospital.

Rufsell, R.A. Portrait Painter to the King, pinx.t — Bartolozzi, R.A. Engraver to the King, sculp.t

London Published May 1.1799

A

View

ILLUSTRATION

of the

Sexual System

OF

Linnæus.

Tomkins Script.

Vincent Sculpt.

CAROLUS LINNÆUS. KNIGHT OF THE POLAR STAR, FIRST PHYSICIAN TO THE KING, PROFESSOR OF BOTANY IN THE UNIVERSITY AT UPSAL, &c&c.

From the Original Picture in the Possession of Aylmer Bourke Lambert Esq.r Vice President of the Linnæan Society.

H. Meyer

Hollman pupil of Linnæus

CAROLUS LINNÆUS, KNIGHT OF THE POLAR STAR, FIRST PHYSICIAN TO THE KING, PROFESSOR OF BOTANY IN THE UNIVERSITY AT UPSAL, &c. &c.

From the Original Picture in the Possession of Aylmer Bourke Lambert Esq. Vice President of the Linnæan Society.

London, Published by Dr. Thornton May 1. 18

NEW ILLUSTRATION

OF THE

SEXUAL SYSTEM

OF

Carolus Von Linnaeus:

COMPREHENDING

AN ELUCIDATION OF THE SEVERAL PARTS OF THE FRUCTIFICATION;

A PRIZE DISSERTATION ON THE SEXES OF PLANTS;

A FULL EXPLANATION OF THE CLASSES, AND ORDERS, OF THE SEXUAL SYSTEM;

AND THE

Temple of Flora, or Garden of Nature,

BEING PICTURESQUE, BOTANICAL, COLOURED PLATES, OF SELECT PLANTS, ILLUSTRATIVE OF THE SAME, WITH DESCRIPTIONS.

. . . . . SHALL BRITONS, IN THE FIELD
UNCONQUER'D STILL, THE BETTER LAUREL LOSE?—
IN FINER ARTS AND PUBLIC WORKS SHALL THEY
TO GALLIA YIELD? . . . . . .

THOMSON.

BY

ROBERT JOHN THORNTON, M.D.

MEMBER OF TRINITY COLLEGE, CAMBRIDGE;....ONE OF THE COUNCIL OF THE LONDON MEDICAL SOCIETY;....HONORARY MEMBER OF THE MEDICAL AND PHYSICAL SOCIETIES OF GUY'S HOSPITAL, OF BARTHOLOMEW'S HOSPITAL, AND OF THE LYCEUM MEDICUM LONDINENSE;....MEMBER OF SEVERAL LEARNED ACADEMIES AND SOCIETIES ABROAD;....LECTURER ON MEDICAL BOTANY TO THE UNITED HOSPITALS OF GUY AND ST. THOMAS;....LATE PHYSICIAN TO THE ST. MARY-LE-BONNE GENERAL DISPENSARY;.....AUTHOR OF THE PHILOSOPHY OF BOTANY;.....THE PHILOSOPHY OF MEDICINE;.....AND OF THE PHILOSOPHY OF POLITICS, &c.

Mo. Bot. Garden,
1897.

LONDON:

PRINTED, FOR THE PUBLISHER, BY T. BENSLEY, BOLT COURT, FLEET STREET.

1807.

Sir W. Beechy R.A. pinx. ad viv

PORTRAIT of HER MAJESTY

Patroness of Botany, and of the Fine Arts.

F. Bartolozzi R.A. ornavit sculp.

London Published Jan.y 1.1799. by [illegible] Bond Street Westminster.

DEDICATION

TO

PERMISSION

TO

Her most excellent Majesty

CHARLOTTE

QUEEN

of the

United Kingdom

OF

Great Britain and Ireland.

TOMKINS fec!

COOPER fec!

DEDICATION.

MADAM!

In Eastern Language high and mighty Potentates are compared to lofty *Trees* which afford Food and Shade to the sun-burnt Traveller. In the more temperate Regions of the Earth, Kings and Princes are contemplated as the *Sun*, which sheds his benign Radiance every where, inspiring each Object with new Life and Refreshment: by the Concurrence, therefore, of all Nations, the great Attribute of Sovereignty is *Protection*; from conferring of which by Your Most Gracious Majesty, the Science of Botany in Great Britain chiefly owes its present Advancement; and this NEW ILLUSTRATION of the SEXUAL SYSTEM of the great LINNÆUS, its Foundation; which in Point of Magnificence is intended to exceed all other Works of a similar Nature on the Continent, and to be not only a National Honour, but an Eternal Memorial of that *Patronage* which is granted to Botany by Your Most Gracious Majesty. From the unbounded *Protection*, so liberally bestowed by an august King, and the best of Queens, all the uſeful and ornamental Sciences, with the pleasing Arts of Painting, and Engraving, have reached their pre-eminence; nor have the English Nation less reason now to be proud also of their superiority in Type and Paper.

Whilst the honourable Exertions of a great Nation have been lately concentrated to embellish and illustrate the Fancy of Poets, or Sacred and Historic Truth; the Science of Botany, advanced as it is by Linnæus, and subsequent authors, and by the glowing imaginations

of modern Poets, who have improved on Ovidian Metamorphosis, seemed, likewise, to have a claim to enlist the fine Arts into her service.

In the humble hope, that this Work, which in its progress has received the smile of the munificent ALEXANDER, Emperor of Russia, will not be found altogether unworthy of your Majesty's countenance, and deeply impressed with the highest consideration of that Honour graciously conferred upon me by your Majesty's most generous *Patronage*,

I have the Honour to subscribe myself,

MADAM!

With the highest Gratitude, and profoundest Veneration,

Your Majesty's most obliged, devoted,

And dutiful Subject,

ROBERT JOHN THORNTON.

PRELIMINARY OBSERVATIONS.

PRELIMINARY OBSERVATIONS.

FLOWERS, although apparently so diversified, consist but of *five* PARTS:

I. The PISTILLUM, in the centre,[a]
II. The STAMEN, exterior to this.[b]

} Both *projecting* bodies, being extensions according to Linnæus, the first of the *pith*, and the other of the *wood*.

The PISTILLUM is discriminated by a *swollen base*, which is the seed-vessel, or GERMEN, which being opened discloses the seeds. The STAMEN is discriminated by having a *part* which forms *the pollen*, or *coloured farina*, called an ANTHER by botanists.

A *perfect* PISTILLUM is composed of *three Parts*.[c]

1. The STIGMA, at top, rarely absent, though sometimes obscure.[d]
2. The STYLE, elevating the Stigma, not absolutely essential.[e]
3. The GERMEN, or *seed-vessel*, always present.[f]

A *perfect* STAMEN is composed of *two Parts*:

1. The ANTHER, at top, containing the *fertilizing pollen*, always present.
2. The FILAMENT, elevating the *anther*, not so essential, being absent in some flowers.[g]

For the protection and nourishment of the SEXUAL ORGANS of vegetables, (viz. the Pistilla and Stamina) Nature has furnished *two other Parts*.

III. The COROLLA, interior,
IV. The CALYX, exterior.[h]

} Both *expanded bodies*, being expansions, according to Linnæus, the first of the *bark*, and the latter of the *rind*.

These are discriminated not only by their *respective situations*, but by the *greater delicacy* of the COROLLA compared with the CALYX, which last is usually green. These parts are not absolutely essential, some Flowers being destitute of one,[i] or both of them.

As an appendage to the Corolla,[k] there is found in some plants,

V. The NECTARIUM, for the secreting, and containing of honey.

VEGETABLE INPREGNATION is thus performed. The *farina* secreted by the *anthers* of flowers, passes on the *stigma* of the *pistillum*, and is there absorbed, and carried to the *seeds*, which it renders fertile, as is confirmed by numerous observations and experiments.

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[a] The PISTILLUM is very conspicuous in the *White Lily*, and in the *Night-blowing Cereus*, as also in the *American Aloe*.

[b] The *six* STAMINA are seen extremely well in the *White Lily* and *Aloe*, as are also the *five* stamina in the *Blue Passion-flower*.

[c] The *White Lily* furnishes an example of a *perfect* PISTILLUM, as also the *Night-blowing Cereus*.

[d] As in the MEADIA. It is extremely distinct in the *Tulip*, *Lily*, and *Passion-flower*.

[e] Vide the plate of *Tulips*, where you will find a PISTILLUM in the centre without the STYLE, also the *Poppy*, whose STIGMA is like a *Parapluis*. The STYLE is very conspicuous in the *Lily*, *Cereus*, and *Passion-flower*.

[f] For THIS PART vide the *Aloe*, *Cereus*, *Lily*, and *Passion-flower*.

[g] Vide the plate of the *Canna*. The FILAMENT is very observable in the *Lily*, *Aloe*, *Cereus*, &c. as well as the ANTHER, with its POLLEN.

[h] These TWO PARTS are finely displayed in the *Blue Passion-flower*, the CALYX of that climbing plant having a *hook* at the extremity of the back of the five leaves, constituting the CALYX.—Vide also the *Meadia*, *Cereus*, &c.

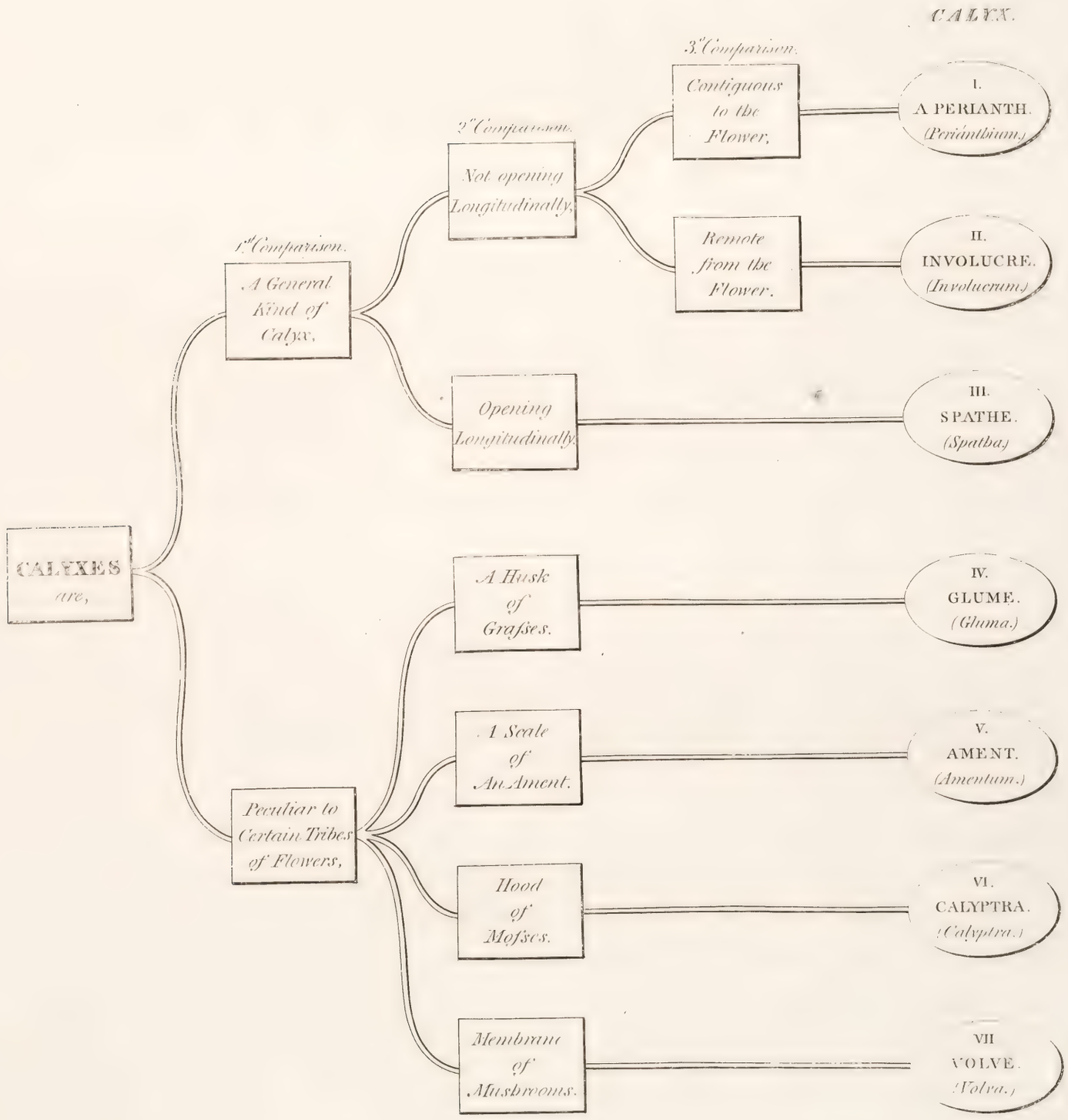
[i] The lilaceous tribe have no Calyx: see the *Superb Lily*; vide also the *Begonia*.

[k] The *radiance*, or *glory*, of the *Blue Passion-flower* is a fine example of the NECTARIUM; vide also the *cup* of the *Renealmia* and *Limodorum*.

ANALYSIS,

OR

Division of Calyxes into their Several Kinds.



THE DIFFERENT KINDS OF CALYX.

THE term CALYX, like our words, horse, bird, dog, habitation, is a generic word, including several distinct kinds, thus:

I. PERIANTH (*Perianthium*), is the outer expanded covering of a flower,...the most common kind of Calyx,...usually green,...sometimes coloured,...contiguous to the corolla,...protecting the organs for reproduction in their infant-state,...sometimes caducous,...often abiding with the fruit,...and sometimes even serving the office of pericarp,...usually single, ...occasionally double,...not unfrequently very obscure,...or wholly deficient.

II. INVOLUCRE (*Involucrum*), is a calyx remote from the flower,...most commonly stationed at the foot of a general, or partial, umbel.

III. SPATHE (*Spatha*), a species of calyx, which first involves the infant-flowers like a sheath, and then opens longitudinally.

IV. GLUME (*Gluma*), the outer valves, or husk of corn, or grass, enclosing one, or more, florets.

V. AMENT (*Amentum*), small chaffy scales, protecting the florets placed on a thread-like common receptacle.

VI. CALYPTRA (*Calyptra*), the covering of a moss, placed over it, like a cap or bonnet.

VII. VOLVE (*Volva*), a membrane, which involves the fungus in its infant-state, and which afterwards appears in a lacerated form on the foot-stalk.

Botanical Terms applicable to the Calyx.*

PECULIAR (*Proprius*), belonging to a single flower....COMMON (*Communis*), common to several flowers....BENEATH (*Inferus*), placed beneath the Germen....ABOVE (*Superus*), above the Germen....MONOPHYLLOUS (*Monophyllus*), consisting of one leaf....DIPHYLLOUS (*Diphyllus*), of two leaves....TRIPHYLLOUS (*Triphyllus*), of three leaves....TETRAPHYLLOUS (*Tetraphyllus*), of four leaves, and so on to POLYPHYLLOUS (*Polyphyllus*), composed of many leaves. ...INTIRE (*Integer*), having the border, or edge of the leaf even....TOOTHED (*Dentatus*), cut into teeth....PARTITE (*Partitus*), divided into segments....REFLEXED (*Reflexus*), bent back.... IMBRICATED (*Imbricatus*), having the leaves placed over one another like the tiles of a house.

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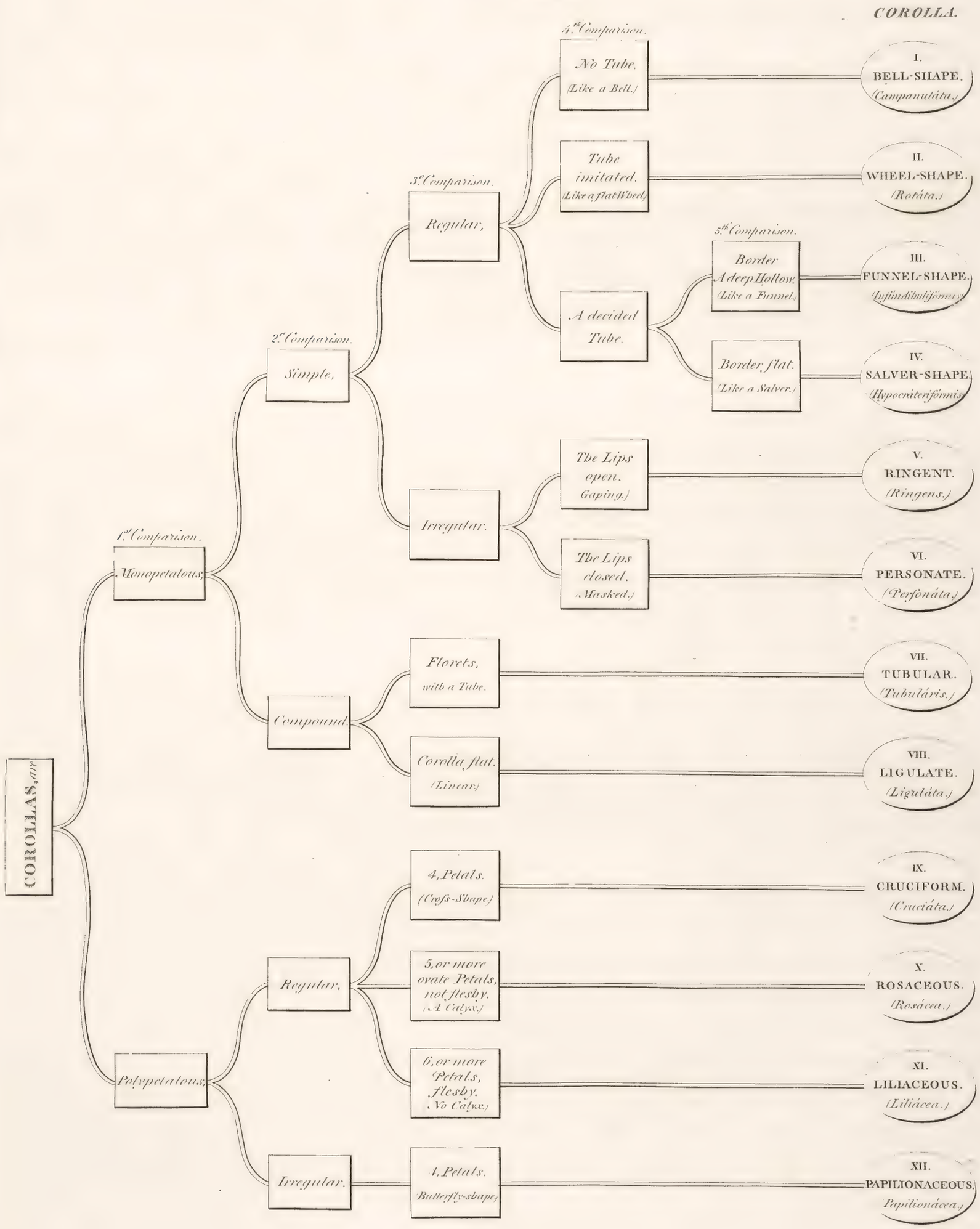
* All or most of these terms are illustrated in our "Picturesque Botanical Plates," and are more fully explained in our "Philosophy of Botany."

ANALYSIS,

OF

Division of Corollas into their Several Kinds.



London Published by D.r Thornton July 3.d 1814.

DIFFERENT KINDS OF COROLLA.

THE term COROLLA is a compound idea, made up of several distinct notions, as

I. BELL-SHAPED (*Campanulata*), hollowed internally like a bell, often ventricose, or swollen at the sides, and without a tube.

II. WHEEL-SHAPED (*Rotata*), slightly hollow, or the border flat, and with so little tube as to resemble a wheel on the ground.

III. FUNNEL-SHAPED (*Infundibuliformis*), having the border of the Corolla like a cone, and placed upon a tube, so as to resemble a funnel.

IV. SALVER-SHAPED (*Hypocrateriformis*), having the corner of the Corolla flat, and placed upon a tube, resembling a salver.

V. RINGENT (*Ringens*), having the border of the Corolla like two lips, and these open, placed upon a tube, resembling a person gaping.

VI. PERSONATE (*Personata*), having the border of the Corolla like the lips, the mouth closed, greatly resembling the snout of an animal, also placed upon a tube.

VII. TUBULAR (*Tubularis*), when the floret of a compound flower ends in a tube, the border being five-cleft.

VIII. LIGULATE (*Ligulata*), when the Corolla of the floret is linear, i. e. resembles the strap of a shoe.

IX. CRUCIFORM (*Cruciata*), having four petals, placed like a St. Andrew's cross.

X. ROSACEOUS (*Rosacea*), having five, or more petals, not fleshy, orbicularly placed.

XI. LILIACEOUS (*Liliacea*), having six, or more petals, fleshy, placed also in a circle.

XII. PAPILIONACEOUS (*Papilionacea*), having four petals, of different shapes and sizes, placed so as to resemble a butterfly on the wing.

Botanical Terms applicable to the Corolla.

MONOPETALOUS (*Monopetala*), composed of one petal only....POLYPETALOUS (*Polypetala*), composed of two or more petals....SIMPLE (*Simplex*), not a compound flower....COMPOUND (*Composita*), made up of distinct florets on a common receptacle....RAYED (*Radiata*), having tubular florets in the *disk* or center, and ligulate in the *ray* or circumference....TUBULAR (*Tubularis*), having florets ending in a tube....LIGULATE (*Ligulata*), having the petal linear like a strap...REGULAR (*Regularis*), with all the parts proportionate....IRREGULAR (*Irregularis*), having all the parts disproportionate....VENTRICOSE (*Ventricosa*), swollen at the sides....CONICAL (*Infundibuliformis*), like a cone....LINEAR (*Linearis*), having the sides parallel....TUBE (*Tubus*), the inferior narrow hollow part of a monopetalous corolla....CLAW (*Unguis*), the inferior narrow flat part of a polypetalous corolla....LIMB (*Limbus*), the upper part of a monopetalous corolla... LAMINA, or BORDER (*Lamina*), the upper flat part of a polypetalous corolla....BANNER (*Vexillum*), the upper petal of a papilionaceous flower....WINGS (*Alæ*), the side petals of ditto.... KEEL (*Carina*), the under petal, shaped like a boat, of ditto....TOOTHED (*Dentata*), the edge cut into teeth....CLEFT (*Fissa*), cut into small segments....PARTITE (*Partita*), cut into deep segments.....A SEGMENT (*Lacinia*), the cut portions of the corolla, larger than teeth.

DIFFERENT KINDS OF NECTARIES.

THE term NECTARY, like the COROLLA, is also a complex idea, like our words pigeon, dog, made up of many different individuals, here indeed too numerous and diversified, to be distributed under heads, for every singular appearance in different parts of the flower, even unconnected with the corolla, or whatever is not corolla, whether it secretes honey, or not, is called by botanists, the NECTARY.

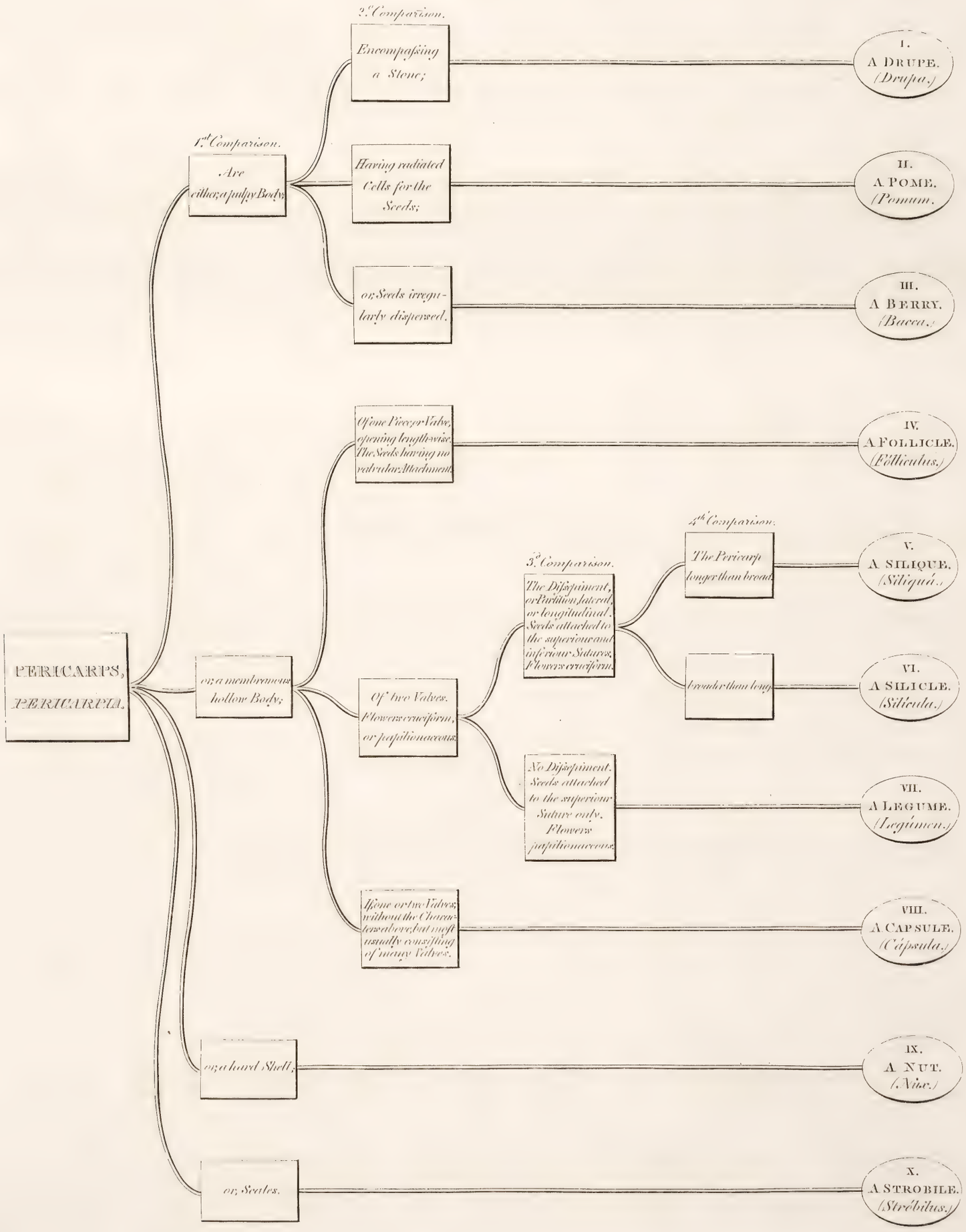
The following are among the more prominent examples.

1. A SPUR, or HORN, (*Nect. corniculatum*), as in LARKSPUR (*Delphinium*).
2. A SMALL OPEN CUP (*Cyathus apertus*), small hollow cups, circularly ranged in the interior of the flower, as in HELLEBORE (*Helleborus*).
3. A CUP CLOSED BY A LID (*Cyathus clausus*), a similar arrangement of nectaries, as in the preceding, but closed with a lid, as in DEVIL IN THE BUSH (*Nigella*).
4. LIKE THE CUT FINGER OF A GLOVE (*Nect. companulatum*), hollowed like the finger of a glove cut off, but depending, as in RENEALMIA, LIMODORUM.
5. LIKE A FUNNEL (*Nect. infundibuliforme*), as in NARCISSUS.
6. LIKE A SLIPPER (*Nect. calceiforme*), as in LADY'S SLIPPER (*Cypripedium*).
7. A SIMPLE CAVITY (*Fovea excavata*), an excavation at the base of each petal, as in CROWN IMPERIAL (*Fritillaria*).
8. A NAKED CHANNEL (*Linea longitudinalis excavata*), an hollow longitudinal groove, in a petal, as in WHITE LILY (*Lilium Album*).
9. VILLOUS PROJECTIONS (*Nect. barbatum*), numerous villi placed upon the petal, as in some species of IRIS.
10. FILAMENTS WITHOUT ANTHERS, IMITATING STAMINA (*Filamenta sine antheris, veluti stamina*), filiform projections like stamina, each terminated with a clasper, as in ARUM.
11. PETAL-LIKE (*Nect. petalum mentiens*), as in SNOW-DROP (*Galanthus*), and TROLLIUS.
12. RESEMBLING A NEST OF DOVES (*Columbulos referens*), five cornuted nectaries, the whole resembling much a nest of doves, as in COLUMBINE (*Aquilegia*).
13. RESEMBLING DOLPHINS (*Figuram Delphini repræsentans*), like a Dolphin elevated on a pillar or filament, as in MONKSHOOD (*Aconitum*).
14. LIKE A TONGUE (*Veluti lingua*), as in INDIAN REED (*Canna Indica*).
15. RESEMBLING RAYS OF GLORY (*Filamenta versicolorata in orbem posita*), projections in the form of rays of glory, as in the several PASSION-FLOWERS.
16. GIVING THE APPEARANCE OF VARIOUS ANIMALS (*Nect. formam animalium mentiens*), as in the several ORCHISES.
17. A NAKED SCALE (*Squama nuda*), as in RANUNCULUS and WILLOW.
18. A FRINGED SCALE (*Squama fimbriata*), as in PARNASSIA.
19. GLANDS UPON THE STAMENS (*Glandulæ filamentis adspersæ*), as in DITTANY (*Dictamnus*).
20. GLANDS AT THE INSERTION OF STAMENS (*Glandulæ filamentis positæ*), as in the STOCK.

ANALYSIS,

OR

Division of Pericarps into their Several Kinds.



London: Published Aug.st 1, 1799, for Dr Thornton.

DIFFERENT KINDS OF PERICARPS.

TEN different sorts of PERICARPS, or SEED-VESSELS, are enumerated by botanists.

I. DRUPE (*Drupa*), is a pulpy seed-vessel...encompassing a stone, or nut.

II. POME (*Pomum*), is a pulpy seed-vessel...not enclosing a stone, or nut...in the middle of which are radiated cells for the reception of seeds.

III. BERRY (*Bacca*), is a pulpy seed-vessel...without radiated cells in the center...having the seeds irregularly dispersed throughout the pulp.

IV. FOLLICLE (*Folliculus*), is a membranous seed-vessel...of one valve...opening longitudinally, i. e. on the side...and having no apparent suture for fastening or attaching the seeds within it.

V. SILIQUE (*Siliqua*), is a membranous seed-vessel...of two valves, with a dissepiment intervening...seeds attached alternately to the upper and under sutures...seed-vessel longer than broad...flowers cruciform.

VI. SILICLE (*Silicula*), has the same definition as the last...except that the seed-vessel is rather broader than long.

VII. LEGUME (*Legumen*), is a membranous seed-vessel...of two valves...no dissepiment...seeds attached to the superior suture only...flowers papilionaceous.

VIII. CAPSULE (*Capsula*), is a membranous seed-vessel...varying in the number of valves... without the characters of Pericarps IV. V. VI. VII. as defined above...splits in a determinate manner into valves.

IX. NUT (*Nux*), a hard stone, or shell, enclosing a kernel...but without a pulpy covering, in which case it would be a Drupe.

X. STROBILE (*Strobilus*), is a seed-vessel composed of ligneous scales, which embrace the seeds within their bosom.

Terms applicable to the different Pericarps.

VALVES (*Valvulæ*), the external pieces forming the sides of the seed-vessel...SUTURES (*Suturæ*), the edges, or margins, by which the valves are connected...COLUMN (*Columella*), a central point of union of the partitions in the seed-vessel...PARTITIONS (*Dissepimenta*), the divisions of the seed-vessel into cells...CELLS (*Loculamenta*), hollow places for the reception of the seeds...ONE-SEEDED (*Monospermus*)...TWO-SEEDED (*Dispermus*), and so on.

DIFFERENT KINDS OF SEEDS.

THE SEEDS present so great a diversity of appearance, that they cannot, like the CALYX, COROLLA, or PERICARP, be grouped into distinct assemblages, but must be presented to the reader individually, of which the following are some of the most striking examples.

1. A DOUBLE SEED, EACH RESEMBLING A BOAT (*Semen duplex, naviculæ formam repræsentans*), as in the umbelliferæ.
2. KIDNEY-SHAPED, WITH HEPTAGON AND PENTAGON CELLS (*Reniforme, cellulis pentagonis et heptagonis*), as in POPPY-SEED (*Semen Papaveris*).
3. OVATE (*Ovatum*), shaped like an egg, as in EYE-BRIGHT (*Euphrasia*).
4. GLOBULAR (*Globosum*), as in the PEA (*Pisum*), and CORIANDER (*Coriandrum*).
5. SQUARE (*Tetragonum*), having four sides, as in FOXGLOVE (*Digitalis*).
6. TRIANGULAR (*Triangulare*), having three sides, as in TANSY (*Tanacetum*).
7. CYLINDRIC (*Oblongum*), oblong, as in ST. JOHN'S-WORT (*Hypericum*).
8. RESEMBLING A PARTICULAR SHELL (*Figuram conchæ mentiens*), as in WOOD-SORREL (*Oxalis*).
9. Ditto, as in PURSLANE (*Portulaca*).
10. Ditto, as in CINQUEFOIL (*Potentilla*).
11. RESEMBLING THE HEAD OF A MONKEY (*Figuram cynocephali repræsentans*), as in the COCOA-NUT.
12. A SINGLE CROWN (*Corona simplex*), as in RAGWORT (*Senecio*).
13. A DOUBLE CROWN (*Corona duplex*), as in HOLY THISTLE (*Centaurea Benedicta*).
14. A SHUTTLE-COCK (*Corona pennacea*), as in DANDELION (*Leontodon*).

Terms applicable to the Seed.

ARIL (*Arillus*), the outer coat of the seed....EYE (*Hilum*), an oblong scar, marking the place where the seed was affixed by an umbilical cord to the seed-vessel....HEART (*Corculum*), the rudiment of the young plant within the seed....PLUME (*Plumula*), the ascending part of the corcule, or infant stem....RADICLE (*Radicula*), the descending part, or infant root....COTYLEDONS (*Cotyledones*), the side-lobes, furnishing nourishment to the corculum....SEMINAL LEAVES (*Folia Seminalia*), the first leaves of the plantule, serving the office of cotyledons, or lobes.... PAPPUS (*Pappus*), a feathery crown....STIPE (*Stipes*), a thread connecting the pappus to the seed.

THE

Prize DISSERTATION

on the

Sexes of Plants.

By

Carolus Von Linnæus;

WRITTEN,

Anno Domini,

1759

Tomkins Scripsit. *J. Halliwell & Co. Sculp.*

THE UNIVERSAL POWER OF LOVE.

Kirby pinx.

Ant Cardon sculp.

MOTTO.

Hence,— *in bright leaves the sexual pleasures dwell,*
And Beaux and Beauties crowd the blossom's bell,
With meeting lips and mingled smiles they sup
Ambrosial dew-drops from the nectard cup:
Delighted Hymen *marks their whisperd vows*
And binds his chaplets round their polished brows.
Guides to his altar, leads the flowery bands,
And as they kneel unites their willing hands.

Darwin.

Tomkins scrip. Cooper sculp.

ON

THE SEXES OF PLANTS.

It is certain that the *Sexes of Plants* could not altogether escape the observance of the most ancient investigators of Nature, and even must have struck some philosophers of modern times: for Nature has furnished this phænomenon to be contemplated in almost every plant; for it must be allowed, that scarce any one can be found devoid of it.

In the remotest period of time, the *Arabians* derived their principal support from the Date-bearing Palm, the *Persians* from the Pistachia Nut, the *inhabitants* of the *Archipelago* from the Fig, and those of *Chios* cultivated the Mastich Tree. In all these it was necessary to attend to the *Sexual Distinction*, in order to promote the efficacy of the *male* as respects the *female flowers*, and hence they could not altogether be ignorant of a circumstance so exceedingly evident, certainly, as far as regards these trees.

But if truly we contemplate the fate of Botanical Science, we shall easily discover the reason why *this theory* continued so long obscured in darkness.

The writings of the ancients testify, that Botany was at a low ebb, when Mathematics and Astronomy had made considerable advancement.

After the regeneration of letters, it was the first endeavour of botanists to separate and investigate amongst the ruins the broken fragments of botanical science; in which endeavour, when they perceived that not much riches were to be collected, at length they turned their researches into Nature herself, and began to describe plants from actual observation, until they were so overwhelmed with their number, that they even despaired to number up the species growing in their own gardens, especially when both Indies poured in daily so great a profusion, that properly to name them all, no memory was sufficient.

At last, *Systematics* endeavoured to describe all plants, with regard to their *fructification*, and to arrange them into their several companies; nor have they ceased this attention even to the present time.

But when these systematic writers were particularly busy about the *Corolla*, which especially courts the eye, and the *Fruit*, which has the greatest use, it happened that they paid little attention to the *minuter parts* of plants, until they perceived that the *larger parts* were of themselves insufficient to discriminate so many plants, which daily increased the army of Flora.

This induced the more modern Botanists to investigate all *those parts* most *minutely*, which are to be met with in the *fructification*, and they esteemed their labours not unrepaid, if from thence they could construct true and convenient characters.

Amongst these the *Stamina* and *Pistilla*, although generally small bodies, and on that account neglected by former persons with contemptuous pride, were found so important, that there is no flower to be met with devoid of these parts.

Afterwards, these *corpuscules* were esteemed of great moment, and on them particular names were imposed; and, moreover, all the several parts of fructification were carefully described.

Exactly to pronounce who *first* discovered the *Sexes of Plants* would be a task of the greatest difficulty, and of no real utility. For many inventions have increased by degrees, just as a river, which at first springs from a small rivulet, several of which run into a single channel, till at length it becomes augmented so as to bear the largest ships.

This knowledge of *Sexual Distinction* cannot be denied to the *ancient cultivators* of PALMS,*

---

* Old Parkinson, who wrote his "*Theatre of Plants*" in 1640, speaking of the *Palm*, says, "the *Date* is the fruit of this tree, the best kinds are called *regiæ*, as being diet fit for kings. The ancient writers have set down many things of the *date-tree*, 'that there are *male* and *female*, and that to make them bear, they must be near each other, or else they will not bear,' but I *pray you* account *this* among the rest of their fables."

It is worthy of enquiry, whether the *ancients* really understood the *meaning* of the *distinction* of the *date-tree* into *male* and *female*, as it is *at present* understood. Quotations will, I think, settle fully this point.

Ὅταν ἀνθῇ τὸ ἄῤῥεν, ἀποτεμόντες τὴν σπάθην ἀφ' ἧς τὸ ἄνθος εὐθὺς ὥσπερ ἔχει, τόντε χνῆν καὶ τὸ ἄνθος καὶ τὸν κονιορτὸν καταseὶσι κατὰ τῆ καρπῆ τής θηλείας, κἂν τῆτο πάθη, διαῤῥεῖ καὶ ἐκ ἀποβάλλει.

"When the *male* PALM is in vigour, the spatha is cut, whence the flowers proceed, as soon as it contains the down, flowers, and *dust*, and they shake this over the fruit of the *female tree*, and from that sprinkling, it turns out, that none drop their fruits, but all perfect them." THEOPH. HIST. PLANT. LIB. II. C. 9.

How near had PLINY hit the mark!

"Arboribus, immo potius omnibus quæ terra gignat, herbisque etiam, utrumque sexum esse, diligentissimi Naturæ scrutatores tradunt: nullis tamen arboribus manifestius quam *Palmis*. Sine maribus non gignere fœminas sponte edito nemore confirmant: circaque singulos plures nutare in eam pronas blandioribus comis. Illum erectis hispidum Afflatu Visuque ipso et Pulvere etiam reliquas maritare: hujus Arbore excisa viduas post sterilescere Fœminas. Adeoque est Veneris intellectus, ut Coitus etiam excogitatus sit ab Homine, ex Maribus Flore ac Lanugine, interim vero tantum Pulvere insperso Fœminis."

"All *trees*, or rather in all things which the earth produces, even in *herbs*, the most diligent enquiries into Nature report, 'there be *two sexes*;' but in none more evident than in *Palms*. It is confirmed, that the wild *female Palms* do not produce fruit without the assistance of the *male*, and for this purpose the *females* bend their boughs to him for mutual embrace. He also marries with the other *female* palms by gentle sighings, tender looks, and the dispersion of a *powder*. This *male tree* being cut down, the widowed females afterwards become sterile. This *love* in plants has been observed by men who imitate it, and by the scattering of flowers and down of the male, or even only by the dispersion of the *powder*, upon the *females*." PLINII NAT. HIST. LIB. XIII. C. 4.

Ὁ δὲ φοῖνιξ ἐρᾶ, καὶ δριμέως, ἓ τέρ φοίνικῳ, ὡς Φλωρεντῖνος ἐν τοῖς Γεωργικοῖς αὐτῶ φησὶ, καὶ ὐ προτερον παύσεται τε πόθε, ἕως ἂν αὐτὴν ὅ ἐρώμενῳ παραμυθήσαιτο. ἔςι γαρ ἰδεῖν τὸ δένδρον ἐπικεκαμμένον και μὴ φέρον τὴν ἰδίαν βάσιν, μηδὲ καρποφορεῖν. τῦτο ὐ λανθάνει τον γεωργὸν, ἀλλ' ὅτι μὲν ἐρᾶ καὶ ἐρᾶται τεκμαίρεται, ἀγνοεῖ δὲ ποῖε· διὰ παραπλόμενῳ φοινίκων, πρλλῶν, καὶ πάλιν ἐπὶ τὴν ἐρῶσα ἐπανιὼν, και ἐφαπλόμενῳ τῆ χειρὶ, δοκεῖ φιλήματι ὥσπερ διακονεῖν. ποῖε δε φοὶνικός ἐςι κὐτῆ πόθῳ σημαίνει τρὸπον τινὰ τῆ τῶν παθῶν καὶ τῆ τῶν χειρῶν, ὡς ἄν τὶς εἶποι, νεῦσει, πρὸς ἐκεῖνον γαρ αποβλέπει, καὶ ἐπ' ἐκεῖνον προῤῥιζῳ ὥσπερ σπεύδεσα ἑαὐτην ἐπιῤῥίπ]ει ἄκῳ ἕν γίνεται τῆ ἐρώση, τῦ γεωργῦ ζυνεχώς ἀπ]ομένε τῦ ἄῤῥενῳ, καὶ τὰς χεῖρας αὐτῦ προσπελάζον]ῳ τῆ ερωμένη· μάλισα εἰ τήν ἄνθην ἐξελὼν ἀπὸ τὴς ζπάθης τῦ ἄῤῥενῳ, ἐνθήσει εἰς τήν κεφαλὴν τὴς ἐρώσης. ὕτω γὰρ πραΰνει τὸν ἔρ]α, καὶ λοιπὸν ἡ φοῖνιξ ἀγλαϊζομένη κἀλλισον καρπὸν οἴσει.

"*Palm* trees possess the passion of *love*, and indeed most ardently, as FLORENTINUS delivers in his Georgics, nor can this passion be extinguished until *they* meet. The *female* in love droops *her* head, nor is the basis firm, nor does *she* then produce fruit. This the farmers notice, they are conscious *she* is in love, endeavour to console *her*, and when *she* meets with the *male* plant *she* loves, *she* elevates herself, and *they* appear to embrace by mutual kisses. And the *male* plant also displays *his* affections, extends *his* arms, and as it were gazes at the object of *his* love, extends *his* roots to hers, and thus embraces *her*. The cure of this *love*, when the *two* are at a distance, is applied by countrymen, who bring the arms or hands of the lover to his mistress, and thus the *male flowers* are placed on the head of the *female* tree. This mitigates the wastings from the flame of *love*, and the rejoicing *female* then bears fruit." GEOPONIC. LIB. X. C. 4.

Περὶ δέ τῶν φυτῶν λέγεσι παῖδες σοφῶν, καὶ μῦθον ἔλεγον τὸν λόγον εἶναι, εἰ μὴ παῖδες ἔλεγον γεωργῶν. ὁ δὲ λόγος· ἄλλο μὲν ἄλλε φυτὸν ἐρᾶν. τῷ δὲ φοίνικι τὸν ἔρωτα μᾶλλον ἐνοχλεῖν. λέγεσι δὲ τὸν μὲν ἄῤῥενα τῶν φοινίκων, τὸν δὲ θῆλυν. ὁ ἄῤῥην ἓν τῦ θήλεος ἐρᾶ, κἂν ὁ θῆλυς ἀπῳκισμένος εἰῆ τῆ τῆς φυτείας στάσει, ὁ ἐραστὴς ὁ ἄῤῥην αυαίνεται. συνίησιν οὖν ὁ γεωργὸς τήν λύπην τῦ φυτῦ· καὶ εἰς τὴν τῦ χωρίε περιωπὴν ἀνέλθων, ἐφορᾷ πῦ νένευκεν. κλίνεται γὰρ εἰς τὸ ἐρώμενον· καὶ μαθὼν, θεραπεύει τῦ φυτῦ τήν νόσον. πτόρθον γάρ τῦ θήλεος φοὶνικος λαβὼν, εἰς τήν τῦ ἄῤῥενος καρδίαν ἐντίθησιν, καὶ ἀνέψυξε μέν τὴν ψυχήν τῦ φυτῦ. τὸ δὲ σῶμα ἀποθνῆσκον πάλιν ἀνεζωπύρησεν, καὶ ἐξανέση, χαῖρον ἐπὶ τῆ τῆς ἐρωμένης συμπλοκῆ· καὶ τῦτό ἐςι γάμος φυτῶν.

"As it respects *plants*, it is the opinion of *philosophers*, which otherwise would be esteemed a fable, to which also farmers subscribe, that plants are taken in *love* with one another, and feel all the disappointment of *love*. They report that there are *male* and *female*. The *female* tree desires the *male*, and if she happens to be at a distance from the *male*, she pines away. On which account the farmer understanding the malady, as a cure plants the *male* on a loftier spot, from which *he* looks down upon his beloved *female*, inclining to *her* his boughs; or he places on the highest branch a bough of the *male-tree* in flower, the sight of which recreates *her* mind, recruits *her* dying body, and revives *her* even by a partial embrace. Such are the *Nuptials of Plants*." ACHILLES. TATIUS. C. 17. p. 88.

Hence those much admired lines of CLAUDIAN, who most happily introduces a notice of this *Love betwixt Plants* in his description of the retreat of Venus into the Island of Cyprus.

Vivunt in Venerem Frondes, omnisque vicissim
Felix Arbor *amat*, nutant ad mutua PALMÆ
Fædera: POPULEO suspirat POPULUS ictu:
Et PLATANI PLATANIS, ALNOQUE assibilat ALNUS.
CLAUDIAN. EPITH. p. 177.

As a confirmation how little the ancients understood the *true* doctrine of the sexes of plants, Theophrastus mentions a *male* and *female* PEONY and FERN, in which last certainly there could be no knowledge of the sexes in plants. He also expressly calls the fig, vine, and pomegranate, *female* plants in Book I. Chap IX. "Cur Feminæ magis Masculi augescunt." "Why female plants grow more than the male plants." ARISTOTLE and PLINY also say, "that the *male* plants differ only from the *female* plants in being *taller*, and more *vigorous withal!* It would be, therefore, absurd to attribute a knowledge of the *sexes of plants* to the *ancients*. "Ferat *Palmam* qui meruit."

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these persons equally understood the *Sexual Relationship* of the FIG,* and likewise in the

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* Theophrastus, in his Second Book "De Causis Plantarum," has Chapter XII. "De Caprificatione et culicibus," where this peculiar process, known by the name of Caprification, is given.

HERODITUS, whom Cicero calls the father of history, mentions distinctly the *caprification* of the *fig*. HEROD. Κλείω.

PLINY also accurately describes the same process under the title "*De Caprificatione*," "*On Caprification.*" PLINII HIST. NAT. LIB. XII. CAP. IV.

PLUTARCH, and other authors of antiquity, relate the same circumstances as are practised at this day in the Archipelago and in Italy. But the best account we have of this curious practice is from TOURNEFORT, in a Memoir read before the Academy of Science at Paris in 1705, the substance of which is as follows.

"Of the thirty species or varieties of the domestic *fig-tree*, which are cultivated in France, Spain, and Italy, there are but two cultivated in the Archipelago. The first species is called *ornos*, from the old Greek *erinos*, which answers to *caprificus* in Latin, and signifies a wild fig-tree. The second is the domestic or garden fig-tree. The former bears successively, in the same year, three sorts of fruit, called *fornites*, *cratitires*, and *orni*; which, though not good to eat, are found absolutely necessary towards ripening those of the garden-fig. These fruits have a sleek even skin; are of a deep green colour; and contain in their dry and mealy inside several male and female flowers placed upon distinct foot-stalks, the former above the latter. The *fornites* appear in August, and continue to November without ripening: in these are bred small worms, which turn to a sort of gnats nowhere to be seen but about these trees. In October and November, these gnats of themselves make a puncture into the second fruit, which is called *cratitires*. These do not shew themselves till towards the end of September, The *fornites* gradually fall away after the gnats are gone; the *cratitires*, on the contrary, remain on the tree till May, and inclose the eggs deposited by the gnats when they pricked them. In May, the third sort of fruit, called *orni*, begins to be produced by the wild fig-trees. This is much bigger than the other two; and when it grows to a certain size, and its bud begins to open, it is pricked in that part by the gnats of the *cratitires*, which are strong enough to go from one fruit to another to deposit their eggs. It sometimes happens that the gnats of the *cratitires* are slow to come forth in certain parts, while the *orni* in those very parts are disposed to receive them. In this case, the husbandman is obliged to look for the *cratitires* in another part, and fix them at the ends of the branches of those fig-trees whose *orni* are in a fit disposition to be pricked by the gnats. If they miss the opportunity, the *orni* fall, and the gnats of the *cratitires* fly away. None but those that are well acquainted with the culture know the critical moment of doing this; and in order to know it, their eye is perpetually fixed on the bud of the fig; for that part not only indicates the time that the prickers are to issue forth, but also when the fig is to be successfully pricked: if the bud is too hard and compact, the gnat cannot lay its eggs; and the fig drops when the bud is too open.

"The use of all these three sorts of fruit is to ripen the fruit of the garden fig-tree, in the following manner. During the months of June and July, the peasants take the *orni*, at the time their gnats are ready to break out, and carry them to the garden fig-trees: if they do not nick the moment, the *orni* fall; and the fruit of the domestic fig-tree, not ripening, will in a very little time drop in like manner. The peasants are so well acquainted with these precious moments, that, every morning, in making their inspection, they only transfer to their garden fig-trees such *orni* as are well conditioned, otherwise they lose their crop. In this case, however, they have one remedy, though an indifferent one; which is, to strew over the garden fig-trees another plant in whose fruit there is also a species of gnats which answer the purpose in some measure."

Linnæus thus explains the *rationale of this practice*. "The *caprificus*, or wild fig, is the *male* plant, and the cultivated fig the *female*. The flowers are disposed within the cavity of the *receptacle*, which is so close shut, that often it will scarce admit the end of a common needle through the pore in its extremity. Now the fig-flies, which are of the *ichneumon* kind, being transformed, and furnished with wings, about the time the *farina* of the *male* fig is ripe, make their escape from those *male* figs, and being wholly covered with their *dust*, after copulation, they seek for a place to lay their eggs, and flying to every one of the *female* figs, they enter their cavities, which are filled with *pistilla* from all sides, by which means they must necessarily brush off that *farina*, or *male dust*, with which they were covered, and thus the *seeds* are impregnated." It is true, the *female* fig can ripen its fruit, though the *seeds* are not impregnated, because this fruit is not a *pericarpium*, or *seed vessel*, but only a *receptacle*: so also the hop, mulberry, strawberry, and blite, can produce fruit, even though their seeds do not ripen, because their fruit is nothing but *a receptacle* or *calyx*. Some botanists who were ignorant of this, seeing those trees produce fruit without previous impregnation. thought they had found an unanswerable argument against the generation of plants; but they did not consider, that the fruit of the fig is not a *seed vessel*, but a *common receptacle*. Yet it appears, that the fruit of the fig, if the seeds are impregnated, grow to a much larger size than those which are not; which Tournefort also observed; for he tells us, that a fig-tree, in Franche Comptè, where there is no caprification, produced every year only 25 pounds weight of figs; but that another of the same size in one of the islands of the Archipelago, produced yearly 280 pounds weight of figs, which is above ten times the quantity of the other. This age hath clearly refuted the opinion of CAMERARIUS, who maintained that the seeds of figs *never* produced any plants. For LINNÆUS tells us, that fig trees are raised every year in Holland from the *seeds*, provided the fruit is brought from *Italy*. But if the fruit grew in France, England, Germany, or Sweden, where there are no *wild figs*, the *seeds produce nothing*; on the other hand, if those seeds are sown, which grew in *Italy* or the *Greek islands*, where the *male* fig abounds, the plants spring up with ease, putting forth leaves, which at first are like those of the mallow. The same experiment was tried with good success in the Upsal garden in the year 1744."

Yet still it would be a difficulty for us to imagine, that such refined knowledge was in the breasts of the ancients.
Tournefort, in explanation of this practice, says, "The prickers contribute to the maturity of the fruit of the garden fig-tree by causing them to *extravasate the nutritious juices*, the vessels inclosing which they tear asunder, or perhaps too, when depositing their eggs, they leave some sort of ferment, which gently agitates the milk of the fig."

This is also nearly the explanation of Theophrastus, to whom a knowledge of the sexes of plants is attributed, in his chapter "De Caprificatione," on *Caprification*. "Cum autem morsu crebro culices ora ficuum aperuerint, humorem absumunt supervacuum, et aditum liberum auris præbent, et omni poma spirantia efficiunt."

"By the numerous piercings of the flies, outlets are made in the figs, by which the *superfluous moisture* is drained, a free passage to the air afforded, and breathing pores effected." THEOPH. B. II. C. XII.

Like some of our *modern* gardeners, who are in the habit of applying the *male* flowers to the *female* in the *cucumber* plant raised under glasses, in order to ensure a produce; so the *ancients* performed the like operation on their palms, pistachias, and figs, and in the same way, but without knowing, or even thinking, of the sexes in plants at the time.

PISTACIA,* certainly as far as respects these trees, who always had the custom of suspending the *male* flowers over the *female* in order to obtain fruit.

Nor can it be denied that the most *ancient writers* have expressly made mention of the *Sexes in Plants.* § But how little true knowledge they possessed upon this subject, and upon what slender foundations it was built, appears from this, that they often mention *males* and *females*, as separate in plants, where *no such distinction existed.*†

Nay, after the revival of letters, even in the last century, Botanists had so imbibed this ancient error, that even eminent teachers of the art so badly discriminated the *Sexes*, that they often called that a *male* which was the *female* plant,‡ which cannot better demonstrate their entire unacquaintance with the subject.

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* The *Turpentine Tree*, the TEREBENTHUS INDICA of THEOPHRASTUS, p. 401, is thus mentioned by Pliny. "Syria TEREBINTHUM habet. *Mascula* est sine fructu. Fæminarum duo species; alteri fructus ruber lentis magnitudine, alteri pallidus."

"In Syria is produced the *turpentine tree*. The *male* bears no fruit. The *female* is of two kinds, the one has red grains of the size of peas, the other sort produces a pale fruit." PLIN. BOOK XIII. CHAP. IV.

This would be decisive, as proving Pliny's knowledge of the sexes of plants, but *unfortunately* for him, there is found in the same book, the following passage:

"Etiam Rhus Syriæ *mascula* fert. sterili fæmina."

"Also in Syria is produced the Rhus, or Sumach, the *male* of which *bears fruit*, but the *female* is *barren*."

BOCCONI, who wrote in 1697, notices the *male* and *female* TURPENTINE TREE. "E perche in sacca et in Agrigento osservai due albere di Pistacchi, differenti una dall altero, e distinti dai paesani contituto do *maschio* et *femina*." "I observed in Agrigentum two trees of the Pistachia, or Turpentine Tree, differing from each other, which the peasants distinguish by the title of *male* and *female*."

I shall produce now a modern authority.

"In the garden of the Austin Friars I saw several large PISTACHIA *nut-trees*, called in Sicilian, *Scornabecco*, and the fruit, *Fastugo*. These trees are of Linnæus's Class DIŒCIA, Order PENTANDRIA, and produce *male* and *female flowers* upon different distinct plants. The latter prove barren and useless, unless rendered fruitful by the aspersion of the *farina* from a *male* plant, and, therefore, the purposes of fecundity can only be answered by trees of *different sexes* being set near each other. In these gardens are many of the *female* kind, and only one of the *male*, which has small, oblong, blunt leaves, of a dusky green, the flowers thick, and in bunches; the *female* blossoms are more scattered, the leaves larger, harder and rounder, and of a lighter colour. The *male* flowers first, and some gardeners pluck them when shut, dry them, and afterwards sprinkle the dust over the *female* tree. But the method usually followed in Sicily, when the trees are far asunder, is to wait till the *female* buds are open, and then to gather bunches of the *male* blossoms ready to blow; these are stuck into a pot of moist mould and hung upon the *female* tree, till they are quite dry and empty; this operation is called *Tuchiare*, and never fails to produce fructification." SWINBURNE's Travels, Vol. iii. p. 386. 2d Ed. 8vo. 1790.

Although I may seem to anticipate the train of reasoning of Linnæus, I cannot forbear relating here a story respecting the *Turpentine Tree* (PISTACHIA TEREBINTHUS) recorded by Duhamel.

"In the garden of Mons. DE LA SERRE, in the Rue de St. Jaque at Paris, there grew a *female* TURPENTINE TREE, which flowered every year, but which furnished him no fruit capable of vegetation. This was a very sensible mortification to the owner, who being ignorant of the doctrine of the sexes of plants, had laboured very hard to obtain an increase of that tree.

"Mess. DUHAMEL and JUSSIEU very properly took away all blame from the elements, and promised him they would soon procure him the pleasure he desired. They sent him a *male* TURPENTINE TREE, which was very much loaded with Blossoms. It was according to their direction planted near to the *female* TURPENTINE TREE. That year it produced a great quantity of fruit well conditioned, and such as, when planted, rose with facility. Being removed, his *female* TURPENTINE TREE became barren as before."

Some gardeners in Sicily, according to SWINBURNE, have ingeniously contrived the art of *budding* the *male* tree upon the *female*, by which means the two *sexes* are placed together upon the *same tree*.

§ The *ancients* certainly had no *true* knowledge of the *Sexes of Plants*, as at this day understood, as I have proved in the *last note*, and *elsewhere*; this indeed LINNÆUS, in the very next passage, seems to admit. Although these facts were thus daily obtruded on their senses, inattentive to the structure of flowers, and ignorant of the offices of the several parts, they remained unacquainted with the true operations of Nature in this phænomenon, though daily presented to their observation.

† As the *male* PEONY, *male* CISTUS, *male* FERN, *male* ORCHIS, *male* VERONICA, *male* ABROTANUM, &c.

‡ The MERCURIALIS PERENNIS, our common *Dog's Mercury*, is thus described by J. BAUHIN. "Ex foliorum alis, *fæminæ* quidem ligulæ rectæ emicant, tenues, quas verticillatim seu in *spica* ambiunt flosculi glomerati muscosi, qui in quatuor foliola herbida sese explicantes, cirros apiculorum luteolorum aut herbidorum ostentant, *nullo succedento semine* pereuntes. *Mari* autem ex eisdem alis breves pediculi oriuntur, quorum singulis *testiculata bursala*, nonnihil compressa, hirsutaque insidet, gemina *semina includens*." Our countryman *Ray* could not let this pass unnoticed, who, in vol. i. lib. iv, chap. v. "De Mercuriali," remarks, "In hac descriptione J. BAUHINUS vulgarem opinionem sequitur, Mercurialem sterilem pro *fæmina*, et fertilem pro *mari* accipiens: cum e contra rationi consonum sit et aliarum rerum naturalium analogiæ, ut sterilis dicatur *mas*, fertilis *fæmina*. *Fæmina* enim est in omni genere quæ fætificat et fructum edit." "In this description JOHN BAUHINE follows the vulgar error, taking the barren Mercury for the *female*, and the fertile as the *male*: for it is contrary to sound judgment, and the analogy of other productions in nature, to call that which is *barren*, the *female*; and that which *produces*, the *male*. The *female* in all plants is that which swells, and produces seeds." Also in another chapter, when speaking of the *Spinach*, "vol. i. chap. iv. De Spinachia," he corrects again the vulgar error of making "the *spiked flowers* into the *female*, and the *sessile ones* into the *male*, also that the *male* and *female plants* were distinct *species*." His words are "Spinachia *fæmina*, seu *sterilis*, perperam pro specie diversâ a CASP. BAUHINO ponitur, cum ex eodem cum fertili semine proveniat."

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SIR THO.S MILLINGTON, F.R.S.
Savilian Professor at Oxford,
President of the Royal College of Physicians.

from a Portrait in the Hall of the Royal London College of Physicians copied by the liberal permission of the President and Fellows of the Royal College

HIC PRIMUS ANTE OMNES FLORUM CONNUBIA VIDIT.

London, Published by Dr. Thornton, March 1, 1807.

The English report, that their MILLINGTON* was the *first true discoverer* of *this doctrine,*

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* Linnæus would not have so slightly mentioned this immortal discovery of the *Sexes of Plants* made by our illustrious countryman MILLINGTON, Savilian Professor (probably *Sedleian* Lecturer on Natural History) at Oxford, and afterwards President of the Royal College of Physicians (a name not even mentioned in the Encyclopædia Londinensis, or Biographia Britannica), but henceforth to be esteemed, like that of the memorable Harvey, or Jenner, had he been able to read the admirable account written in English of that important discovery, as it is given us by the learned Grew, in his "Account of the *Anatomy of Flowers,* prosecuted with the bare eye, and with the microscope," being a discourse read before the Royal Society Nov. 9, 1676, in which he thus clearly explains this matter.

"The Attire I find to be of two kinds, *Seminiforme* and *Florid.* That which I call *Seminiforme,* is made up of two general parts, *chives* and *semets,* one upon each chive. These semets (as I take leave to call them) have the appearance, especially in many flowers, of so many little seeds; but are quite another kind of body. For, upon enquiry, we find that these semets, though they seem to be solid, and for some time after their first formation, are entire; yet are they really *hollow*; and their side, or sides, which were at first entire, at length crack asunder: and that moreover the concave of each semet is not a mere vacuity, but filled up with a number of minute particles, in form of a powder. Which, though common to all semets, yet in some, and particularly those of a *tulip* or a *lily,* being larger, is more distinctly observable,

"These semets are sometimes fastened so, as to stand erect above their chive, as those of *larks-heel.* Sometimes, and I think usually, so as to hang a little down by the middle, in the manner and figure of a kidney, as in *mallows.* Their cleft or crack is sometimes single, but for the most part double: at these clefts it is that they disburse their powders; which as they start out, and stand betwixt the two lips of each cleft, have some resemblance to the common sculpture of a pomegranate with its seeds looking out at the cleft of its rind. This must be observed when the clefts are recently made, which usually is before the expansion of the flower.

"The particles of these powders, though like those of meal or other dust, they appear not easily to have any regular shape; yet upon strict observation, especially with the assistance even of an indifferent glass, it doth appear, that they are a congeries, usually, of so many perfect globes or globulets; sometimes of other figures, but always regular. That which obscures their figure is their being so small: in *dogs-mercury, borage,* and very many more plants, they are extremely so. In *mallows,* and some others, more fairly visible.

"Some of these powders are yellow, as in *dogs-mercury, goats-rue,* &c. and some of other colours: but most of them I think are white; and those of *yellow henbane* very elegant, the disbursed powders whereof, to the naked eye, are white as snow; but each globulet, through a glass, transparent as crystal; which is not a fallacy from the glass, but what we see in all transparent bodies whatsoever, lying in a powder or small particles together.

"The use of the *attire,* how contemptibly soever we may look upon it, is certainly great. And though for our own use we value the leaves of the flower, or the foliation, most; yet of all the three parts, this in some respects is the choicest, as for whose sake and service the other two are made. The use hereof, as to ornament and distinction, is unquestionable; but this is not all. As for distinction, though, by the help of glasses, we may make it to extend far; yet in a passant view, which is all we usually make, we cannot so well. As for ornament, and particularly in reference to the semets, we may ask, If for that merely these were meant, then why should they be so made as to break open, or to contain any thing within them? Since their beauty would be as good if they were not *hollow*; and is better before they crack and burst open, than afterwards.

"Other uses hereof therefore we must acknowledge, and may observe. One is, for food; for ornament and distinction to us, and for food to other animals. I will not say, but that it may serve even to these for distinction too, that they may be able to know one plant from another, and in their flight or progress settle where they like best: and that therefore the varieties of these small parts are many, and well observed by them, which we take no notice of. Yet the finding out of food is but in order to enjoy it: which, that it is provided for a vast number of little animals in the *attires* of all flowers, observation persuades us to believe. For why else are they evermore here found? Go from one flower to another, great and small, you shall meet with none untaken up with these guests. In some, and particularly the *sun-flower,* where the parts of the *attire,* and the animals for which they provide, are larger, the matter is more visible. We must not think, that Almighty God hath left any of the whole family of his creatures unprovided for; but as the Great Master, somewhere or other carveth out to all; and that for a great number of these little folk, he hath stored up their peculiar provisions in the *attires* of *flowers*; each flower thus becoming their lodging and their dining-room, both in one.

"Wherein the particular parts of the *attire* may be more distinctly serviceable, this to one animal, and that to another, I cannot say: or to the same animal, as a *bee,* whether this for the honey, another for their bread, a third for the wax: or whether all only suck from hence some juice; or some may not also carry some of the parts, as of the globulets, wholly away.

"But this is only the secondary use of the *attire.* But the primary and chief use of the *attire*" (anther) "is such, as hath respect to the plant itself; and so appears to be very great and necessary. Because, even those plants which have no flower or foliature, are yet some way or other attired; either with the seminiform, or the florid *attire.* So that it seems to perform its service to the seed, as the foliature, to the fruit. In discourse hereof with our learned Savilian Professor, Sir Thomas MILLINGTON, he told me, he 'conceived that the *attire* doth serve as the *male,* for the generation of the seed.'

Grew goes on. "When the semet" (*anther*) "ripens, it lets fall the contained powder" (*farina*), "which particles of powder" (*farina*) "themselves burst, and let loose a finer *powder*" (*pollen*), "which performs the office of *male,* and being carried to the seed-case" (*germen*) "imparts to the seeds a *prolific virtue.*" Vide *Grew's Anatomy,* p. 171. Nothing, therefore, can be clearer than that both MILLINGTON and GREW *first* perfectly knew the *sexes of plants.*

Doctor Pulteney also, in his "Historical and Biographical Sketches of the Progress of Botany," is willing to grant the merit of this great discovery to Grew *in preference* to Millington. Probably this high merit should be equally shared by both.

"Whether," says he, "the true idea of the Sexual Process originated with Sir Thomas Millington, to whom it has been usually ascribed, may justly admit of a doubt; since Sir Thomas has left no written testimony on the subject; and Dr. Grew's mention of him does not imply that he actually received the idea from him. Add to this, that Mr. Ray, in the summary view of all Grew's discoveries, which he has prefixed to his "History of Plants," does not mention Sir Thomas Millington's name. Interested as we must suppose Mr. Ray to have been, in every discovery relating to vegetables, and candid as he was in his general conduct to the learned, it is not likely that he should have failed, in this instance, to render praise where it was so justly due. When we further recollect, that Dr. Grew had been some years engaged in those microscopical experiments, on the anatomy of plants, which have rendered his name estimable with all posterity, that whilst he was thus employed in studying so intimately the organization of vegetables, and had observed, that in whatsoever parts the flower might be deficient, the *attire* is ever present, is it not strange that the true idea of its *use* should have been suggested to him?"

if it be allowed to call him an inventor, who *understands the thing*, but has not taught it in *writing*. They contend that about the year 1676, he saw the *whole mystery*; and, *in truth, not long after*,* GREW and RAY,† both Englishmen, explained this matter farther.

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* It perhaps may be objected to Linnæus, that he did not clearly comprehend why this discovery is attributed to MILLINGTON, but it is a known fact, that LINNÆUS was unacquainted with the English language, and, therefore, could only receive his knowledge from the report of others. The whole story has been fully explained in the last note.

† Our illustrious countryman RAY was made, by the writings of GREW, a *complete convert* to the doctrine of the *Sexes of Plants*. In his "*Historia Plantarum*," " History of Plants," published in 1686, Book I. Chap. X. " *De floribus Plantarum, et primo de eorum Partibus.*" " The Flowers of Plants and of their Parts." Speaking of the stamina, he expressly says, " Grevius noster non hunc tantùm usum stamina præstare opinatur, sed et pollinem illum seu globulos quibus apices prægnantes sunt, quósque per maturitatem effundunt, spermatis masculini instar seminibus fœcundandis inservire existimat; ac proinde maximam plantarum partem utriusque sexus participem esse. Quod non adeò incredibile videri debet, cum et in Animalium genere nonnulla androgyna observantur, ut v. g. Cochleæ terrestres; quamvis quidem in seipsis non generent, quo à plantis differunt. Nec obstat, quòd particulæ hæ (si modò sperma sint aut spermati analogæ) in uterum aut semina non penetrent, nam et in piscibus externè tantùm ovis jam editis inspergitur genitura, nec in ullo animalium genere, quod sciam, ovarium intrat, at nè uterum, quidem ipsum in plerisque, sed solus ejus halitus et effluvia subtilia sufficiunt ad ova fœcundanda, et embryon intus conclusum vivificandum.

" Hæc si ità sint, non similitudine aliqua duntaxat, sed revera et strictè loquendo sexu differunt plantæ illæ, quarum aliæ semen absque flore, aliæ (ab ejusdem plantæ semine ortæ) florem absque semine producunt. Tales sunt in Arborum genere *Palma dactylifera, Salices* pleræque ex nostra observatione, et secundùm Plinium etiam *Cedrus major:* in Herbarum, *Lupulus salictarius, Cannabis, Cynocrambe, Mercurialis, Phyllon, Urtica, Spinachia, Sesamoides* Clusii, aliáque non pauca.

" D. Grevii sententiam magnopere confirmant, quæ de Palma dactylifera à Veteribus et Recentioribus traduntur, nimirum fœminas non omnino fructificare, nisi mas juxta ipsas consitus fuerit: quin et pulverem maris fœminæ aspersum eam fœcundiorem reddere. Ni enim Ægyptii hoc fecerint (inquit Prosper Alpinus) sine dubio fœminæ vel nullos fructus ferent, vel quos ferent non retinebunt, neque hi maturescent. At inquies in arenosis et desertis, ubi nemo maris pulverem seu pollinem florum fœmineo fœtui aspergit, fœminæ nihilominus fœcundæ sunt. Immo verò ventorum beneficio, qui pulverem marium fœminis afflant."

" Our countryman GREW supposes the stamina to perform the office of the *male*, and that the *farina* with which the *anthers* are filled, and which separates from them when mature, serves the purpose of fructifying the *pistillum*, or female; and that the majority of plants are *bisexual*; that is, contain *both sexes* in the same *corolla*. Not that plants, like the snail, and some other species of animals, are *androgynous*, but are sufficient of themselves to produce their kind. Nor is there occasion, that the *farina* should pass into the *germen* to the *seeds*, but only an *halitus*, or *subtile effluvia*, which is capable of itself to vivify the included embrios.

" Besides *bisexual* flowers, there are also others strictly *unisexual*, having the *two sexes apart*, for from the *same sort of seed* there shall spring up two plants, whereof one shall bear only *stamens* or *males*, and the other only *pistils* or *females*. Of this kind are the *date-bearing palms*, according to Pliny the large *cedar*, and from *our own observation* many of the *willows*; and in herbs, the hop, hemp, mercury, nettle, spinach, and a great many others.

" What is reported by the ancients and moderns greatly *confirm* this opinion of Grew, respecting the *date-bearing palm*, that the *females* do not fructify, unless the *male* be placed near them, or the *farina* of the *male* be dispersed over the *female* flowers (PLIN. HIST. NAT. LIB. 13. C. 4.) Unless the same was performed in Egypt, without doubt the *females* would produce no fruit, or what they had they would drop, or not ripen (PROSPER ALPINUS LIB. DE PLANT ÆGYPT.) It may be objected that dates are found in uninhabited spots, but here the *farina* is wafted to the *females* by means of the *wind*."

He, however, modestly ends with " Opinio autem hæc de usu pollinis prædicti ulteriori adhuc confirmatione indiget; nos ut verisimilem tantum admittimus." " This opinion of Grew, of the use of the *pollen* before mentioned, wants yet more decided proofs; we can only admit the doctrine as extremely probable." But this was only his cautious manner of writing, as in the following passage, Lib. iv. Hist. p. 156. where he treats of Herbs, " quarum fructus a floribus totis plantis distant, seu de Sexu distinctis." " On herbs, whose fruit is produced on plants separate from the male flowers, which are produced on other plants of the same kind," he writes " Plantæ hac sectione comprehensæ, si sexu reverà non differant, prout nos opinamur, umbram saltem aut similitudinem quandam sexûs obtinent, cùm in eadem specie nonnullæ naturâ steriles sint, et seminis infœcundæ; aliæ fertiles et semine prægnantes. Has nonnulli mares vocant, illas fœminas: alli rectiùs illas mares faciunt, has fœminas. Semina enim plantarum Animalium ovis respondent, quæ fœminæ pariunt, non mares. *C. Bauhinus* quas nos sexu tantùm diversas statuimus, specie distinctas facit: minùs rectè; cùm ex ejusdem plantæ semine utræque oriantur: æquo enim jure Virum et Fœminam species hominis distinctas facere potuisset."

" Plants comprehended in this section, if they do not differ in sexes, *a doctrine which we maintain*, nevertheless they possess at least the shade or similitude of *sexes*, since in the same species of plants some are found barren, *produce no seed*; whilst others are fertile, *producing seed*. The *latter* some have called *males*, the former *females:* others, of which number we are, more justly make the barren *males*, and the seed-bearing *females*. For the *seeds* of plants correspond to the *eggs* of animals, and what produces *these* are called *females*, not *males*. CASPAR BAUHINE has made into *distinct species*, what we have given as only *differing in sex*, and *badly*, for from the *same seed* both *sexes spring*; for with equal propriety might the man and woman be made distinct species."

" In his subsequent work, " *Synopsis Methodica Stirpium Britannicarum.*" " A Methodical Synopsis of British Plants," published in 1689, p. 52. when making the same class of British plants, where the *sexes* are *distinct*, in the proem, he openly declares, " Hinc colligitur *stamina* non esse partem otiosam et superfluam, sed *potius* valde *utilem* et *necessariam*. Hinc enim *confirmatur* sententia opinantium *pulverem* in *apicibus staminum* contentum, spermatis masculini vicem præstare." Hence it may be collected, that the *stamina* are not an idle and superfluous part, but, on the contrary, very useful and necessary. This class of flowers confirms the opinion of those, who teach that the *dust* contained in the *anthers* of the *stamina performs the office of the male*."

I have been the more elaborate in this note to wipe away a very prevailing opinion, that our countryman RAY had doubts respecting the *sexes of plants*, because he hinted, as expressed above, that this doctrine should be established by *experiments*, as is here done by LINNÆUS. RAY's works throughout evince a *true* knowledge of the *Sexes of Plants*, and this doctrine owes much, as LINNÆUS allows, to both GREW and RAY.

VAIL-

Farina of Flowers, as observed by the Microscope, Published by Geoffroy in the Year 1718.

1. St. Johns-Wort.

2. Trefoil.

3. Violet.

4. Borage.

5. Comfrey.

6. Sycamore.

7. Lily.

8. Jonquil.

9. Spider-Wort.

10. Euphorbia.

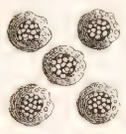
11. Acanthus.

12. Spanish Broom.

13. Tuberose.

14. Campanula.

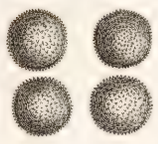
15. Passion-flower.



16. Pink.

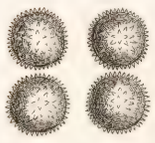
17. Geranium.

18. Pompion.



19. Sun-flower.

20. Convolvulus.



Geoffroy del. *Mazel sculp.*

London, Published by Dr. Thornton, August 1807

CAMERARIUS,* and several others after him,† have well explained this doctrine:

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* Camerarius, Professor at Tubingen, in his book "De Sexu Plantarum," "On the Sexes of Plants," published in 1694, acknowledges, "that he first became convinced of the truth of this doctrine by perusing what had been written on this subject by Grew, and afterwards by Ray, to whom he attributes the honour of establishing this important discovery." His experiments were only on the *Maize*, the *Mulberry*, the *Ricinus*, and the *Mercury*; the three first of which he deprived of the *stamen-bearing*, or *male* flowers, and the last he separated from its correspondent *female*, and found that the seeds produced in each instance *did not vegetate*.

† In 1703, Mr. Samuel Morland, desirous, as it should seem, of extending the Lewenhookian system of generation into the vegetable kingdom, produced a paper before the Royal Society, in which he advances—that the *farina* is a *congeries* of plants, one of which must be conveyed through the style into every *ovum*, or seed, before it can become prolific. He founded his opinion "from observing an opening in the arillus, or husk, of the bean, situate near where the plantule is found lodged, which he conceived was formed on purpose for the admission of a globule of the farina, which so disposed became the plantule." The refutation of this opinion will presently appear.

In 1711, was read, "A Dissertation on the Structure and Use of the Parts of Flowers," by Mons. Geoffroy, before the Royal Academy of Science at Paris, where several curious remarks on the Farina, and some experiments on the Sexes of Plants, are given.

Speaking of the farina, Mons. Geoffroy says, "It would be difficult to describe all the different figures of the farina; for however small, each corpuscle has a regular, determinate, and constant figure. In the general run this figure is oval, with a groove the whole length, resembling a grain of corn, or a seed of coffee, as in the Bryony, &c. But,

1. In that of the St. John's Wort, Hypericum Vulgare, of Caspar Bauhine's Pinax. (Hypericum Perforatum, Lin.) appear like oval bodies, pointed at their extremities, and swelled in the middle.
2. In that of the Trèfoil, Melilotus officinarum Germaniæ, C. B. P. (Trifolium officinale, Lin.) like a cylinder, having a band running its length.
3. That of the Violet, Viola Montana tricolor odoratissima, C. B. P. (Viola grandiflora, Lin.) presents a prism with four irregular sides, transparent, and reflecting different forms.
4. That of the Borage, Borago floribus cæruleis, J. B. (Borago officinalis, Lin.) are likewise cylinders, but compressed in the middle, and shining in three different distinct spots.
5. That of the Comfrey, Symphytum, Consolida major, C. B. P. (Symphytum officinale, Lin.) represents two crystal balls attached together.
6. That of the Sycamore, Acer montanum candidum, C. B. P. (Acer Pseudo-Platanus, Lin.) presents a perfect cross.
7. That of the Lily, Lilium album vulgare, J. B. (Lilium candidum, Lin.) an oblong oval, pointed at both ends, and with a groove its whole length.
8. That of the Jonquil, Narcissus juncifolius, luteus, minor, C. B. P. (Narcissus Jonquilla, Lin.) have the form of a kidney.
9. That of the Spider-wort, Ephemerum Virginiacum, flore cærules majori, J. R. H. (Tradescantia Virginica, Lin.) resembles a barley-corn.
10. That of the Euphorbia, Tethymalus Characias angustifolius, C. B. P. (Euphorbia Characias, Lin.) and of the Palma Christi, Ricinus Vulgaris, C. B. P. an ovoid figure, with a rising its whole length.
11. That of the Acanthus, Acanthus rarioribus et brevioribus aculeis munitus, J. R. H. (Acanthus mollis, Lin.)
12. That of the Spanish Broom, Genista Juncea, J. B. (Spartium junceum, Lin.) are oblong, rounded at their extremities, and has two bands, being two luminous eminences.
13. That of the Tuberose, Hyacinthus Indicus, (Tuberosus, flore Hyacinthi orientalis, C. B. P. Polyanthes Tuberosa, Lin.) swelled in the middle, so as to make a prism with three sides.
14. That of the Campanula Campanula pyramidalis, altissima, J. R. H. are round transparent, with light eminences, and a luminous point in the center.
15. That of the Passion-flower, Granadilla Polyphyllos fructu ovato, J. R. H. (Passiflora cœrulea, Lin.) are nearly round, with small risings over the surface.
16. That of the Pink, Caryophyllus sylvestris calidarum regionum, J. R. H. are round, the surface a regular mosaic.
17. That of the Geranium, Geranium sanguineum maximo flore, C. B. P. round, with a kind of navel, as in the apple.
18. That of the Pompion, Melepepo compressus, C. B. P. (Cucurbita Melopepo, Lin.) are round, with short pointed eminences.
19. That of the Sun-flower, and Marsh Caltha, Caltha palustus, have the surface covered with hairs.
20. That of the Althea riretescens (Lavatera Olbia, Lin.) and the Convolvulus purpureus, C. B. P. (Convolvulus hederacius, Lin.) have the surface covered with very short eminences.

After many observations on the Sexes of Plants, he relates the following experiment.

I raised several plants of Maize, or Turkey corn, which on the summit of its branch produces male, or stameniferous flowers, and the fruit is enclosed in a leafy sheath.

I removed the stamina with all the care imaginable, as soon as they shewed themselves, and before the pistilliferous flowers appeared.

Upon most of these plants so served, the spike, after growing to a certain size, dried up, and the grains were withered, or only a few grains[a] attained its proper size, and these, but thinly scattered along the rachis, which might probably arise from imperfect castration.

The same event occurred to him with the Dog's Mercury.

As to the manner of the embryo being conveyed into the seed, he accords entirely with Morland. He says, "that the best microscopes can never discover the plantule, or embrio, in the early stage of the pistillum, nor even when more advanced, unless the farina has reached the stigma of the pistillum." His words are, "En effet, si l'on examine dans les plantes legumineuses, le pistile, ou cette partie qui devient la gousse, avant que la fleur soit encore éclose, et qu'après l'avoir débarrassée des feüilles et des étamines, on la regarde au Soleil avec un microscope, on y remarque très aisément les petites vesicules vertes et transparentes qui doivent devenir les graines placées dans leur ordre naturel, et dans lesquelles on ne distingue rien autre chose que l'enveloppe ou l'écorce de la graine. En continuant d'observer pendant plusieurs jours de suite dans d'autres fleurs à mesure qu'elles avancent, on remarque que ces vesicules grossissent et se remplissent d'une liqueur claire dans laquelle, lorsque les poussiéres se sont répandües et lorsque les feüilles de la fleur sont tombées, on commence à appercevoir un petit point ou

[a] It was a pity he had not tried the experiment of sowing these grains.

globule

globule verdâtre qui y flotte librement. On n'apperçoit encore rien d'organisé dans ce petit corps, mais avec le temps et à mesure qu'il grossit, on y distingue peu à peu deux petites feüilles comme deux cornes. La liqueur se consomme insensiblement à mesure que ce petit corps grossit; et la graine étant devenüe tout à fait opaque, en l'ouvrant on trouve sa cavité remplie de la petite plante en raccourci, composée du germe ou de la plumule, de la radicule et des lobes de la Féve ou du Pois.

" Si au contraire dans les pivoines à fleurs doubles, qui sont tout à fait denuées d'étamines et de sommets, on examine les graines qu'elles produisent, soit qu'elles soient avortées ou qu'elles ne la soient pas; on les trouve vuides contenant seulement quelques membranes dissechées et sans aucune apparence de germe, semblables en cela à l'œuf d'une poule qui n'a point été fecondé. En effet, s'il y eût eû un germe dans ces membranes, n'auroit-il pas dû grossir à proportion de ces enveloppes, et devenir très sensible.

" En suivant cette conjecture, il n'est pas difficile de déterminer de quelle maniére le germe entre dans cette vesicule; car outre que la cavité du pistile s'étend depuis son extremité jusqu'aux embryons des graines, ces vesicules ont encore une petite ouverture près de leur attache qui se trouve à l'extrêmité du conduit du pistile; ensorte que le petit grain de poussiére peut tomber naturellement par cette ouverture dans la cavité ou espece de cicatricule reste encore assés sensible dans la pluspart des graines: on l'apperçoit très aisement sans le secours du microscope dans les Pois, dans les Féves et dans les Phaseoles.

" La racine du petit germe est tout proche de cette ouverture, et c'est par cette même ouverture qu'elle sort, lorsque la graine vient à germer."

Next in order follows the boastful BRADLEY, who published his " New Improvement in Planting and Gardening, both Philosophical and Practical," in 1721. He writes, " Mr. MORLAND has, in *Phil. Trans.* No. 287, anno 1703, given us to understand how the dust of the apices in flowers (i. e. the male sperm) is conveyed into the germen or *vasculum seminale* of a plant, by which means the seeds therein contained are impregnated. I then made it my business to search after this truth, and have had good fortune enough to bring it to demonstration by several experiments; since which, a gentleman of Paris has printed something of the same nature, in the *Hist. de l'Acad. de Sciences*, for the years 1711 and 1712, which were published about ten years ago.

" But to come to the point; the lily being a flower more generally known than any other, and its generative organs being large and exposed, I shall from thence endeavour to explain the method which nature makes use of to impregnate the seeds of that and every other plant, and by which means the several species of vegetables have been continued to the world.

" The flower of the lily has six leaves or petals, which are set on upon the summit of the footstalk; they serve to guard the parts of generation from the injuries of the weather; and as they are of no other use that I know of, so it is not necessary that I should place them in the figure.

" *B* is the mouth of the pistillum, or passage which leads into the germen *C*, in which are three ovaries filled with little eggs or rudiments of seeds, such as we find in the ovaria of animals; but these eggs will decay and come to nothing, unless they are impregnated by the *farina fœcundans* or male seed of the same plant, or one of the same sort.

" From *D* to *E* is a stamen of the lily, through which the male seed of the plant is conveyed to be perfected in the apex *F*, where, by the sun's heat, it ripens and bursts forth in very minute particles like dust; some particles of which powder falling upon the orifice *B*, is either conveyed from thence into the germen *C*, or by its magnetic virtue, draws the nourishment, with great force, from the other parts of the plant into the embryos of the fruit, and makes them swell.

" Now, that the *farina fœcundans* or male dust has a *magnetic virtue*, is evident; for it is that only which bees gather and lodge in the cavities of their hind legs to make their wax with; and it is well known, that wax, when it is warm, will *attract* to it any light body. But again, if the particles of this powder should be required by Nature to pass into the ovaries of the plant, and even into the several eggs or seeds there contained, we may easily perceive, if we split the pistillum of a flower, that Nature has provided a sufficient passage for it into the uterus, or germen.

" In the first figure I have only given a design of one stamen with its apex, to prevent mistakes in my explanation; but the flower of every lily has six of the same figure and use, which are placed round about the pistillum, or female organ; so that it is almost impossible it should escape from receiving some of the male dust (or *farina fœcundans*) falling upon it.

" In this and other flowers of the like nature, the pistillum is always so placed, that the apices (*anthers*) which surround it, are either equal in height with it, or above it; so that their dust falls naturally upon it. And when we observe it to be longer than the apices, we may then conjecture that the fruit has begun to form itself, and has no longer occasion for the male dust. And it is likewise observable, that as soon as this work of production is performed, the male organs, together with the leaves or covering, fall off, and the pipe leading to the germen begins to shrink.

" We may farther remark, that the top of the pistillum in every flower, is either covered with a sort of velvet tunick, or emits a gummy liquor, the better to catch the dust of the apices (*anthers*).

" And now, as we may find in the description I have given of the lily, that the germen is within the flower; so, on the other hand, the germen of a rose is without the flower, at the bottom of the petals or flower-leaves. And likewise in fruit trees, the cherries, plums, and some others, have their utricles within their flowers; and the gooseberry, currant, apples and pears, on the outside or bottom of their flowers. But farther; although Nature has designed the dust of the apices to fecundate the pistillum contained in the flowers of plants, yet we observe that in some plants, the male and female organs are remote from each other. As, for example, the *Gourd, Pompion, Melon, Cucumber*, and all of that race, have blossoms distinctly, male and female, upon the same plant. The male blossoms may be distinguished from the others, in that they have not any pistil rudiment of fruit about them, but have only a large thrum covered with dust in their middle: the female blossom of these has a pistillum within the petals or flower-leaves, and the rudiment of their fruit always apparent at the bottom of the flower before it opens: and so in like manner all nut-bearing, and, I think, mast-bearing trees, have their *catkins* or male blossoms remote from the female flowers.

" The oak, for example, which blossoms in May, has its male flowers distinct from the acorns; we find strings of little farinaceous flowers in great abundance, as in the second figure marked *G*, remote from the rudiments of the acorns or fruit, marked *H*. And so likewise in the *Walnut, Chesnut, Hazel, Pine, Cypress*, and even the *Mulberry, Aspen*, and others. I have observed that some sorts of *Willows* change their Sex every year, by producing only male blossoms or *catkins* one year, and the other following, strings of female blossoms, which, if they then happened to be near enough some flowering male, will produce seeds.

" When we view, with a good microscope, the male dust of any single plant, we find every particle of it to be of the same size and figure; but in some cases it is of three colours, as in the *tulip*, where it is yellow, green, and black; but as plants differ from one another in their figures and qualities, so are the figures of their several dusts greatly different from each other: a grain of the dust of *Geranium Sanguineum, maximo flore*, of *C. B. P.* is like a bead of a necklace with a hole through it.

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" The farina of the *Corona Solis perennis, Flore et Semine maximis, Hort. Ludg. Bat.* is a globe set with thorns; that of the *Ricinus Vulgaris, C. B. P.* is of the figure of a grain of Wheat.

" And the *Acer Montanum Candidum* of *C. B. P.* affords a dust of the figure of a cross: and in like manner does the farina of every plant differ in its shape from the rest.

" The female organs of generation in plants are best seen in large fruits, without the trouble of the microscope; such as the fruit of the *Pompion* or *Melon,* where, with the natural eye, we may discover the vessels distinctly, which make the *tunic* or covering of each ovary: we may see how the seeds are joined to it, and by what end they receive their nourishment. And again, between the several ovaries enclosed in that fruit, we may very easily perceive the hollow, or passage, through which the *farina fœcundans* has passed to impregnate the seeds.

" It may perhaps be objected against this hypothesis, that there are many flowers which hang downwards, as the *Crown Imperial,* the *Cyclamen,* &c. and that their pistils cannot receive the *farina fœcundans* upon them: but if we observe that the pistils of these flowers are always more prominent, or somewhat longer than the dusty apices which surround them, we may easily conceive that the *glutinous matter* and *velvet covering* on the *extremities* of the pistils, may be capable enough of receiving and holding some of the powder as it falls; and whether the intromission of the *farina fœcundans* be requisite or not, its lodgment on the mouth of the pistillum may, by virtue of its attractive quality, *perhaps* fecundate the seeds contained in the germen: I am sure, in the production of animals, there are yet greater difficulties to encounter with; and it may be, if the analogy between plants and animals was more enquired after by the learned, they might discover many new things which would be serviceable to the preservation and benefit of animal bodies, as this knowledge will be to the improvement of the vegetable world.

" I shall now proceed to what I call the *demonstrative part* of this system. I made my first experiment upon the *tulip,* which I chose rather than any other plant, because it seldom misses to produce seed. Several years ago I had the conveniency of a large garden, wherein there was a considerable bed of tulips in one part, containing about four hundred roots: in another part of it, very remote from the former, were twelve tulips in perfect health. At the first opening of the twelve, which I was very careful to observe, I cautiously took out of them all their apices (ANTHERS), before the *farina fœcundans* was ripe, or any ways appeared: these tulips being thus castrated, bore no seed that summer; while, on the other hand, every one of the four hundred plants, which I had let alone produced seed."

Blair, in his " Botanical Essays," in that " On the Generation of Plants," has collected the opinions of all former writers, and added his own, in refutation of the embryo being constituted in the particles of farina. He has added no experiments of his own on the Sexes of Plants.

Next follows our illustrious MILLER, in the Gardener's Dictionary, published in 1730, under the word " Generation." After detailing the different sentiments and opinions advanced on this subject, he ends by relating his own experiments.

" I shall conclude with mentioning a few experiments of my own, which I communicated to Dr. Patrick Blair, which he improved as a proof of his opinion of effluvia; and Mr. Bradley also, as a proof of the farina entering the germen in substance, and leave the curious enquirer to determine on that side of the question, which reason and experiment shall influence him.

" I separated the male plants of a bed of *spinage* from the female, and the consequence was, that the seed did swell to the usual bigness; but when sowed, it did not grow afterwards: and searching into the seed, I found it wanted the *Punctum Vitæ.*

" I set twelve *tulips* by themselves, about six or seven yards from any other; and as soon as they blew, I took out the stamina so very carefully, that I scattered none of the male dust; and about two days afterwards I saw bees working on a bed of *tulips,* where I did not take out the stamina; and when they came out, they were loaded with dust on their bodies and legs, and I saw them fly to the *tulips,* where I had taken out the stamina; and when they came out, I found they had left behind them sufficient to impregnate these flowers, for they bore good ripe seeds. But by a piece of gauze put over the flowers the experiment is found to answer.

" In a letter communicated by Paul Dudley, Esq. to the Royal Society, wrote from New England, he mentions the interchanging of the colours of the *Indian wheat,* if the various colours are planted in rows near each other; but if they are planted separately, they constantly keep to their own colour: and this interchanging of colours has been observed, when the distance between the rows of corn has been several yards; though he says, if there happens to be a high board fence between the different coloured corns, the alteration of colours is entirely prevented.

Cucumbers do always produce male and female flowers upon different parts of the same plant: the male flower (which appears upon a slender footstalk, and has a slender column in the middle, covered with an orange-coloured farina) is by the gardeners commonly called *false blossoms,* and are sometimes by unskilful persons pulled off soon after they appear, supposing that they weaken the plants if suffered to remain, which is a very great mistake: for in order to try this experiment, I planted four rowss of *cucumber* plants in a place pretty far distant from any other; and when the flowers began to appear, I constantly pulled off all the male flowers from time to time before they opened: the consequence was, that all the young fruit dropt off soon after they appeared, and not one single fruit remained to grow to any size, though the vines were equally strong with those which I had planted in another place, where I suffered all the flowers to remain upon them, from which I had a great quantity of fruit.

" From these, and many other experiments, it is very plain, that there is a neceffity that the embryo of the female flower should be impregnated by the farina or male dust, in order to render the fruit perfect; but how, or in what manner it is performed, is what we can only guess at, since in the generation of animals, our greatest naturalists differ very much in their opinions, nor can any of them ascertain any particular method how it is performed.

" Some persons have objected to the theory of the generation, as here laid down, because they have observed some female plants produce fruit, without having been impregnated by the male.

" It is certain, that the female plants may produce fruit without the impregnation of the male; but it is not certain, that this fruit or seed will, if sown, produce another plant. What has been so often related by travellers and historians, of the necessity of the male palm-tree being near the female, in order to render it fruitful, hath been, it is supposed, fully refuted by Father Labat, in his account of Africa, where he has treated of the several sorts of palms: he says, that he observed, in Martinico, a large palm-tree, which grew by the side of a convent, which produced fruit in plenty, though there was no other palm-tree growing within two leagues of this; but he also observed, that none of these fruit would grow, though they had made many trials of them; so that they were obliged to procure some fruit from Barbary, in order to propagate these trees. He likewise adds, that the fruit which grew on this female tree, never ripened so perfectly, nor was so well tasted, as those which came from trees which had stood near some of the male. Therefore we may conclude, that the fruit or seed may be produced by the female plants of most kinds, without the assistance of the male sperm, which may appear to sight perfect, and fit to produce other plants; but if we examine the seeds, we shall find that most of them have not the germ, or little plant inclosed, nor will grow, if they are sown.

But none better than VAILLANT,‡ the great French botanist, who, in his academic

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" From a repeated number of experiments, in separating the male from the female plants, I have always observed, that where it has been done in time, and with proper care, so as that there could have been none of the *farina fœcundans* of the male plant scattered on the female; that though the female plants have produced sometimes fair seeds to appearance, yet, when they have been carefully sown, there has not been one plant produced from them.

‡ The honour of the discovery of the *Sexes in Plants* is always torn from our countrymen, and given by the French to VAILLANT. In that famous Poem,[a] published in Vaillant's " *Botanicon Parisiense*," " *De Connubiis Florum*," the poet gives this honour to VAILLANT.

" Callibus insistat veterum pede turba sequaci,
Vulgaresque animæ, servûm genus; at sibi stravit
Intactum VALIANTUS iter. Quâ callidus arte
Dirigat in flores etiam sua tela CUPIDO
Vidit, et herbarum detexit *primus* amores.
MACENCROE, M. D."

There are also other pieces of poetry which preface this work to the same effect:

" Omnibus in terris quæsitum ad Florea regna,
Et nemo in terris inveniebat iter;
At nunc si patuit, si flos hic *masculus*, ille,
Fœmineus, vel *mas fœmineusque simul*;
Arma viri melius si *stamina* credimus esse
Pistillum melius conjugis esse tubam,
Nec latet, inque tubas inque ova ut fulguris instar
Mane ferax rigidi staminis aura ruat;
Audiat Elysiis hæc TOURNEFORTUS in arvis.
Inventum decus est hoc VALIANTE *tuum*.
DEMETRIUS DE LA CROIX, M. D."

Another,

" L'ingenieux VAILLANT grand partizan de Flore,
Epia la Nature, et la prit sur le fait;
Par un souffle subtil it vit les fleurs éclore,
Et de leur tendre *amour* le mystere secret.
LOUIS BADON DE LA RIVIERE."

And, in order to fix this honour more permanently on VAILLANT, under his portrait is engraved,

" Hic *primus* ante alios *Florum Connubia* vidit."

We do not mean to deny the knowledge VAILLANT had of this subject, for he has presented us, in his discourse " De Structurâ Florum, horum Differentia, Usuque Partium," " On the structure of Flowers, their Variety, and the Uses of the component Parts," published in 1718, with a very florid description of the Marriage of Plants, and his particular observations on the PARIETARIA (*Pellitory of the Wall*), of which, for the sake of the curious and inquisitive reader, we shall make a short extract.

" Quoties autem accideret, ut in eâdem stirpe flores gerantur simul, quorum hi fœminina tantum, illi autem masculina et fœminina conjuncta, organa cingunt, arrectio, tumorque organorum masculinorum in hisce tam subitò contingit, ut lobuli gemmæ flosculosæ cedant illorum impetui, atque hinc inde semet expandant mirabili meherculè velocitate. Etenim eodem hocce momento libidinosa hæc ingenia nihil ardentiùs cogitant, nisi ut violentos luxuriei affectus expleant, neque citiùs libera se et expedita experiuntur, quin extemplò quàm vehementissimè fœcundam explodant, omnemque uno impetu ejaculentur, genituram, diffusà nimirum pulverulentâ nubeculâ spargente quaquaversùm fœcundationem arvi genitalis. Verùm, quàm rara, quàm mira, catastrophe! ipso hoc fœcundandi ardore adeò semet exhausta dolent, ut ipso, quo prolem vitam donant, momento sibimet mortem parant præsentissimam!

" Neque vel hic tamen Scena clauditur. Quid ergo? Vix venereus hic lusus absolutus est, quin ilicò florum labia, aut lobuli, ad se invicem accedant eodem quidem, quo à se mutuò recesserant, celeritatis impetu, veteremque ita formam statim renovent. Ita quidem, ut difficillimum foret credere, flores hosce ullam vim passos esse, nisi vel ipse actum hunc vidisset oculus, vel adhuc cerneret caduca sceleta magnanimorum heroum, qui hanc pugnaverant pugnam; clara quippe hæc gestæ fortiter rei monumenta supersunt aliquamdiu erecta in campo conflictûs, aut Aplustrium instar Jacularios experiuntur lusus volitantis Zephyri.

Apparatum huncce artificiosum facilè spectare datur in PARIETARIA. Sed accedas oportet horâ sacrâ Veneri! Aurora est, quæ favet et adspirat diversorum in plantis sexuum voluptatibus, congressibusque; ubi verò agere fortè renuunt satis opportunè ex voto Tui observantis, cogere vel sic poteris, aciculæ apice leniter modò stimules. Si enim matura jam hisce ætas lusibus, opus tantum erit quàm blandissimè unum elevare lobulorum, statimque spectaculo quàm jucundissimo oblectaberis; filamenta quippe, vel manubria staminum ex arcuato hactenus incurvoque flexu in erectum arriguntur situm, ut vi acta violentâ; tumque liquidò spectatur singulare quodque et tectum, quod in exercitio hocce peragitur venereo. Vaillant Sermo de Florum Structurâ, p. 9." A property not less extraordinary has been discovered in other plants.

The learned Founder and President of the Linnæan Society, London, Dr. SMITH, read a paper " *On the Irritability in the Stamina of the Barberry, &c.*" before the Royal Society, Feb. 14, 1788.

" The stamina of such of the flowers of the BARBERRY (*Barberis Communis*) as were open were bent backwards to each petal, and sheltered themselves under their concave tips. No shaking of the branch appeared to have any effect upon them. With a very small bit of

[a] This very interesting Poem, containing 525 lines, was written by Dr. Grant, an Irish student at Paris, under a masked name. It has been since published alone by White, edited by Sir Richard Clayton, Bart.

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oration published by BOERHAAVE, shewed that he knew this thing *accurately*, although he has not demonstrated it by actual experiments.

From that period, that is from the year 1718, many have attempted to raise up this rock, especially the author of the *Sexual System*, who had supposed that the thing itself was clear, and already established from his various labours, although PONTEDERA* has indeed attempted to refute it.

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stick I gently touched the inside of one of the filaments, which instantly sprung from the petal with considerable force, striking its *anthera* against the *stigma*. I repeated the experiment a great number of times; in each flower touching one filament after another, till the anthers of all six were brought together in the center over the stigma.

" I took home with me three branches laden with flowers, and placed them in a jar of water, and in the evening tried the experiment on some of these flowers, then standing in my room, with the same success.

" In order to discover in what particular part of the filaments this irritability resided, I cut off one of the petals with a very fine pair of scissars, so carefully as not to touch the stamen which stood next it: then, with an extremely slender piece of quill I touched the outside of the filament which had been next the petal, stroking it from top to bottom; but it remained perfectly immoveable. With the same instrument I then touched the back of the anthera, then its top, its edges, and at last its inside; still without any effect. But the quill being carried from the anthera down the inside of the filament, it no sooner touched that part than the stamen sprung forwards with great vigour to the stigma. This was often repeated with a blunt needle, a fine bristle, a feather, and several other things, which could not possibly injure the structure of the part, and always with the same effect.

" To some of the antheræ I applied a pair of scissars, so as to bend their respective filaments with sufficient force to make them touch the stigma; but this did not produce the proper contraction of the filament. The incurvation remained only so long as the instrument was applied; on its being removed, the stamen returned to the petal by its natural elasticity. But on the scissars being applied to the irritable part, the anthera immediately flew to the stigma, and remained there. A very sudden and smart shock given to any part of a stamen would, however, sometimes have the same effect as touching the irritable part.

" Hence it is evident, that the motion above described was owing to an high degree of irritability in the side of each filament, next the germen, by which, when touched, it contracts, that side becomes shorter than the other, and consequently the filament is bent towards the germen. I could not discover any thing particular in the structure of that or any other part of the filament.

" This irritability is perceptible in stamina of all ages, and not merely in those which are just about discharging their pollen. In some flowers, which were only so far expanded that they would barely admit a bristle, and whose antheræ were not near bursting, the filaments appeared almost as irritable as in flowers fully opened; and in several old flowers, some of whose petals with the stamina adhering to them were falling off, the remaining filaments, and even those which were already fallen to the ground, proved full as irritable as any I had examined.

" From some flowers I carefully removed the germen, without touching the filaments, and then applied a bristle to one of them, which immediately contracted, and the stigma being out of its way, it was bent quite over to the opposite side of the flower.

" Observing the stamina in some flowers which had been irritated returning to their original situations in the hollows of the petals, I found the same thing happened to all of them sooner or later. I then touched some filaments which had perfectly resumed their former stations, and found them contract with as much facility as before. This was repeated three or four times on the same filament. I attempted to stimulate, in the midst of their progress, some which were returning, but not always with success; a few of them only were slightly affected by the touch.

" The purpose which this curious contrivance of Nature answers in the private œconomy of the plant, seems not hard to be discovered. When the stamina stand in their original position, their antheræ are effectually sheltered from rain by the concavity of the petals. Thus probably they remain till some insect, coming to extract honey from the base of the flower, thrusts itself between their filaments, and almost unavoidably touches them in the most irritable part: and thus the impregnation of the germen is performed; and as it is chiefly in fine sunny weather that insects are on the wing, the pollen is also in such weather most fit for the purpose of impregnation.

" The *Barberry* is not the only plant which exhibits this phænomenon. The stamina of *Cactus Tuna*, a kind of Indian Fig, are likewise very irritable. These stamina are long and slender, standing in great numbers round the inside of the flower. If a quill or feather be drawn through them, they begin in the space of two or three seconds to lie down gently on one side, and in a short time they are all recumbent at the bottom of the flower."

* Pontidera was professor of Botany at Pisa, and published, in 1772, his " Anthologia, sive De Floris Natura." " A Discourse on the Nature of Flowers." In his preface he expresses that his chief design in this publication was to repress the prevailing belief of the Sexes of Plants. " Quin etiam cum multos videam præclare indolis juvenes tum veterum, tum recentiorum potissimum traditionibus ita allici, ut perfacile imperita et infirmiora ingenia in iis ipsis rei Botanicæ principiis decipi possint, succurrendum esse, et totis viribus providendum, ne latius malum diducatur, judicavi. Quod sane et illis, quas in horto anno superiore habui, dissertationibus ex parte præstiti, auditores meos subinde monendo, ut ab illis opinionibus, quæ ingenii specie blandiuntur, caverent. Perfacile siquidem juvenilis etas inventiunculis, quæ novitate alliciunt, capitur, quibus semel imbuta per omne vitæ tempus sæpenumero eas servat. Et revera non video quid aliud huic potius timere debeamus, quam cum homines auctoritate eximia, ut animos rerum imperitos ad se convertant, et alliciant, ita loquuntur: esse stirpes in mares, in fœminas, in androgynas distributas; partesque illas, quas in deliciis habemus, floresque vocamus, nihil aliud esse, nisi generationis organa: dari in plantis, ut Plinii verbis utar, *Veneris intellectum, maresque afflatu quodam, et pulvere etiam fœminas maritare?* Quis istos, qui hæc se ab aliis non accepisse, sed vidisse profitentur, qui conjugii tempora tradunt, qui rationem, quæ frigidæ in Venerem stirpes solicitentur, docent, etiamsi iis non omnino assentiatur, tamen non legendos ediscendosque judicabit? Quo exemplo alii incitati illis sese adjicient. Quare eveniet, ut vel hujusmodi opinionibus sese obnoxios tradant, illisque perpetuo adhæreant, de quibus jam actum esse supra indicavimus; vel ut vanas et commenticias rejiciant, atque una totam rem Botanica in contemptu habeant. His itaque de causis maturandum esse cognovi. Quapropter libellum anno proxime elapso de hujusmodi rebus conscriptum."

His method of refuting the sexes of plants is too curious wholly to omit noticing. In Chapter XXVI. " De Tubæ usu," " On the Office of the Style," he gives us the following opinion: " Tuba hoc præcipuum munus exhibere mihi videtur, ut per ipsam aer in fructus cavitatem delatus contentos succos in motum cieat, quo facilius complicati seminis partes subire valeant. Hoc autem ex eo patet, primum quod aer pernecessarius est, ut ob ipsius compressionem seminis angustias humores ingrediantur, deinde quod nihil aliud, nisi aer, in fructus cavitatem per tubas potest admitti. Nam, si apicum corpuscula juxta quorundam Philosophantium sententiam per tubas in uterum deferri conjiciamus, statim gummitiones illæ, pilorum ordines, fistulæ, et viarum angustia ab hac opinione revocant; si vero ad illos accedimus, qui non apicum corpuscula, sed volatilem succum in apicibus contentum excipi a tubarum fistulis tradunt, statim cur tanta machinatione via illa munita fuerit, menti obversatur. Idcirco, etiamsi apices, qui in plurimis plantis non reperiuntur, semper reperiri, et apicum succum ad semina fœcundanda per tubarum fistulas in fructus cavitatem, et ad embryonis principium penetrare ultro darem atque concederem, adhuc tamen de canaliculi munere inquirendum esset. Neque tamen Tournefortii sententia, qui inutiles partes secerni, et extra fructum amandari per tubas opinatus est, valeret. Nam, si lenti et resinati succi, pili, fistulæ, et tenuissimi canaliculi quidquid deorsum illabitur, sisti cogunt, quamvis corpora omia naturaliter suopte pondere deorsum ferantur, multo facilius, si quid sursum ascenderet, prohibitura nemo negabit. Accedit etiam, ut nullum corpus, nisi proprio motu cieatur, ut in animantibus contingit, tam facile sursum ferri valeat. Nihil igitur, nisi aer, per tubas aut ingredi aut egredi potest. Hinc itaque patet cur evulsa tuba sine maturitate contabescat fructus; nullus enim amplius partibus contractis, aeris ingressus fit, cujus ope seminis partes explicari possint. Evenit etiam sæpenumero ut tubarum extremitas vel maligno rore, vel nocturno frigore, aut pruinis, quæ primo vere aliquando contingunt, ita afficiatur, ut, contortis fibrillis, claudatur foramen. Tunc itaque tenelli embryones acerbi decidunt, et pars magna vindemiæ perit, inutilesque segetes metuntur. Quapropter, ne hoc tam crebro contingeret, crassiores in extremitate tubos fabrefecit natura, plurimis utriculis resinato succo refertis, quo frigoris vis retunderetur, circumpositis."

" That the office of the *style* is to convey air to the seeds, and cause a fermentation—that the *stigma* is filled with resinous juices to soften the severity of frost, and hinder insects from penetrating its pores—that the removal of the *style* causes the abortion of the seeds, or its decay by frost, only from want of the proper spiracula, for the admission of air."

Speaking of the *stamina* he places their use " as props to give a greater stability to the pistillum, and also that they form a nutritious fluid, which is prepared in the anthers, and which descends down the filaments, and so enters the germen."

" Sæpius Pistillum staminibus, apicibusque Natura fulcivit, atque circumsepsit, ut in Malva, Althæa, in Papilionaceis floribus, in quibus vel a vagina stamina excipiuntur tubæ, ut in flosculosis proprie dicto et lingulato, vel a petalo ut in semiflosculosis." Chap. XXV.

He ridicules the notion that Nature leaves her productions to the chance of the winds. " Why," says he, " should we fabricate new ways? Why have recourse to the unstable air? Why fly to the atmosphere? Why implore the assisting aid of winds? when a more natural explanation offers, a shorter and surer journey, by which the nutriment is conveyed to the fruit without the sportings of the winds? Indeed, it is not at all probable, that as the other parts of the flower are fabricated with so much skill and caution, that in her chief and principal concern, she should prove so extremely dull and thoughtless."

" Consideranti mihi sæpenumero, num naturæ expediret, si apicum corpuscula vel saltem apicum liquor per tubam ad embryonem transmitterentur, quod a nonnullis litteris proditum suo loco explicandum reservamus, cum multa occurrunt, tum potissimum staminum dispositio, quæ me, quo minus cum illorum opinione meam conjungam, etiam invitum abducunt. Non enim rationi consentaneum esse videtur, quod apicum corpuscula, medio aere, et ventis adjuvantibus, ad pistillum deferantur, et per pistillum ad embryonem, cum in omnibus floribus stamina ita disposita ac collocata videam, ut nullo negotio apicum succus ad embryonem per stamen, cui apices adhærent, transmitti possit. Cur enim nobis novas fingimus vias? Cur ad aerem confugimus? Cur ventorum manus imploramus, si naturalis, si brevissima via reperitur, per quam liquores nullum passi aeris, ventorumque ludibrium ad fructum afficiendum deferantur? Numquid dubitamus, quin potius ipsi pistillo, quam staminibus naturæ industria adhæsissent apices, si per pistillum illorum succus embryonem fuisset subiturus? Non enim verisimile est, cum cætera in flore et in plantis summa industria, consilioque summo constituisset, in re præcipua, et tam necessaria, adeo hebetem, inertemque fuisse naturam. Mihi contra quam maxime solors et industria videtur, cum hoc, quem videbimus, ordine stamina ita disposuerit, ut inde appareat, hoc opus nequaquam neglexisse. Nam in iis, quos in exemplum assumemus, floribus subest divinum ingenium, et vera naturæ vis, Quod quidem aperte demonstrat, hoc spectasse, et id egisse, non illud a veri similitudine alienum, quod multis laudibus nobis extulerunt. Principio itaque stamina vel embryonis receptaculo, vel ramulo, cui embryo adhæret, affixit, quo facilius apicum liquor ab utriculis egressus per stamen, purus, non aeris, non pluviæ, non roris inclementia male affectus ad embryonem evolvendum transiret. Deinde stamina mirabili consilio firmavit, munivitque, ne deorsum aut sinistrorsum inclinata canaliculos contraherent, liquoremque descendentem prohiberent, aut in via cogerent sisti. In omnibus igitur floribus monopetalis, quoniam hi in partes nequaquam secti firmiter receptaculo affiguntur, interiori florum parieti adhærent stamina per intervallum digesta, et una cum petalis receptaculo insident.

The argument drawn from the *mutilation* of the *stamen,* as well as the *pistillum* he has thus evaded.

He enters next upon more *slippery* ground, where the sexes of flowers are placed apart.

First of the Fructification of the Palms. He observes,

1. " That these produce fruit in deserts, where no art is employed."

" Etsi satis superque id quod nunc proponimus, expositum atque explanatum sit, tamen, quoniam sæpe eo contingere videmus, quæ nulla ratione attingenda sunt, breviter adhuc inquirendum judico, num in aliqua regione *Palmæ* ita nascantur, ut nisi a sterilibus *Palmis* ipsarum embryones afficerentur, nunquam hi maturitatem haberent. Quare de *Palmis* in Ægypto et circumpositis provinciis nascentibus, et de portentosa illa *Palmarum* cultura est disserendum. Sed ante omnia illud explanare aggrediar, ut ostendam, *Palmas dactyliferas* extra Ægyptum sine illo cultu (quo scilicet sterilium *Palmarum* flores, hianti fœminæ spathæ inseruntur), nisi id regionis terræque conditione prohibeatur, palmulas ad maturitatem perducere. Nam quod in Græcia fructum ad maturitatem non perducant *Palmæ*, id hac de causa contingere judico, videlicet vel quod Græcia non ita calidiori plagæ subjecta sit, ut *Palmarum* natura requirit, vel quod in solo minus apto plantentur, vel denique quod cultus alienus adhibeatur. Etenim etiam cultum plurimum ad *Palmarum* fertilitatem conferre, auctorum monumenta testantur; et sæpe quæ steriles habitæ sunt, et propterea neglectæ jacebant, cum cultus accessisset, repente fœcundæ evaserunt, fructus quam uberrimos ferentes. Unde *Palma* illa in agro Hydruntino, postquam, recisis, quibus undequaque adumbrabatur, arboribus, aeris et Solis vim propius excepit, vegetior reddita fructus edere cœpit, cum antea neglecta sterilis permansisset. Hoc autem magis verisimile videtur, quam quod procerior facta, masculæ *Palmæ* Brundusii sitæ auram maritalem ex alto hausisset. Hanc historiam Pontanus ex vulgari opinione poetice illustravit ad hunc modum:

Brundusii latis longe viret ardua terris
  Arbor Idumæis usque petita locis.
Altera Hydruntinis in saltibus æmula Palmæ,
  Illa virum referens, hæc muliebre decus.
Non uno crevere solo, distantibus agris,
  Nulla loci facies, nec socialis amor.

Permansit

Permansit sine prole diu, sine fructibus arbor
Utraque, frondosis et sine fruge comis.
Ast postquam patulos fuderunt brachia ramos,
Cœpere et cœlo liberiore frui,
Frondosique apices se conspexere, virique
Illa sui vultus, conjugis ille suæ
Hausere et blandum venis sitientibus ignem,
Optatos fœtus sponte tulere sua:
Ornarunt ramos gemmis, mirabile dictu,
Implevere suos melle liquente favos.

Verum ad hanc sententiam loqui solis Poetis conceditur. Cæterum mirifice libero et patulo non opaco solo coli gaudet Palma. Argumentum ex Suetonio Tranquillo in Augusti Imperatoris vita habemus de Palma in Mundæ saltibus reperta, quæ, recisis adumbrantibus arboribus, cum ipsa jam annosa fibras nimium contractas diducere non posset et crescere, tamen ut vegetior facta stolonem protruxit, qui citissime adolescens matrem superavit. 'Apud Mundam,' inquit, 'Divus Julius castris locum capiens, cum sylvam cederet, arborem Palmæ repertam conservari, ut omen victoriæ jussit. Ex ea continuo nata soboles adeo in paucis diebus adolevit, ut non æquipararet modo matricem, verum etiam obtegeret, frequentareturque Columbarum nidis: quamvis id avium genus duram et asperam frondem maxime vitet.' Evenit igitur, ut Palmæ etiam ob cultus negligentiam steriles sæpenumero habitæ sint.

Quare nos hoc in loco de Palmis quas peculiares regiones sponte ferunt, tantum dicere aggredimur. Ecquis itaque hujusmodi in desertis et vestæ solitudinis Arabiæ regionibus cultum illum qualis in Ægypto et circumpositis provinciis, Palmis adhibitum unquam meminerit? 'Haud credendam' (verba sunt Guilandini apud Prosperum Alpinum) 'istam Palmarum conceptionem, quæ fit arte a te narrata, arguere videntur innumeri dactyli, qui in Arabiæ desertis feruntur; in quibus sylvestrium Palmarum sylvæ reperiuntur, quæ sine hominum cultu optimos fructus ac copiosos producunt, retinent, ac maturant.' Hæc autem ita valida est ratio, ut impar ad refellendum Alpinus ad ventorum providentiam se se converterit. 'Arabes,' ait, 'Palmarum cultus periti respondebunt, Palmarum fœcunditatem in Arabiæ desertis, licet arte non fiat (quando in his locis hæ arbores, ut dictum est, sine ulla cultura fructus producant) adjuvare ventos, marium e ramis pulveres floresque ad ramos fœminarum asportantes.' Nam cur in Ægypto hoc sini cultu non fit? Numquid venti in cultis regionibus ita dociles non sunt, ut in desertis?"

II. " That the reason why art is usually employed, is to carry *flies* to the female flowers to pierce the *spathas* for the admission of air, or to convey the nutriment secreted in the anthers to the pistillum.

" That *caprification* is used, rests wholly on the authority of the father of history, Herodotus, in contradiction to all modern authorities.

" Nunc autem summam Dei Opt. Max. providentiam mirari subit, qui divino profecto beneficio illis populis ut esset, quo vitam sustentarent, succurrendum judicavit. Nam cum succus qui in peculiaria vascula colligitur vel ob partes quibus componitur, vel quod nimis crassus quam par est, ita affectus ad palmulas fortasse deferatur, ut palmulæ quidem explicentur, et crescant, sed ad maturitatem nulla ratione perduci possint, immaturæ ac inutiles ad terram delabuntur. Hinc itaque peculiare Culicum genus creatum fuisse opinor qui sterilium Palmarum floribus innascerentur: hi ad fructiferarum embryones delati eos terebrant, inutili succo viam aperiunt, aerem et solem quibus lenti crassique utriculorum succi subigantur, inferunt, partesque Medico veluti quodam morsu ita afficiunt, ut poma omnia retineantur, et perfectionem habeant. Quare Palmarum cultores, ut propius culices nascantur, inter fœcundas et fructiferas Palmas steriles et floriferas ordinare solent, siquæ longius sitæ sunt, funibus appensis, per quos Culices repere possint, conjungere, tum sterilium spadices abscissos per fructiferarum spathas distribuere, florumque pulverem atque una Culices super hiantes spathas discutere. Hanc Palmarum per Culices culturam vetustissimus Auctor Herodotus, dum per illas regiones iter faceret, diligentissime omnia rimando princeps deprehendit, litterisque ad hunc modum mandavit in Κλειώ, ita liber inscribitur: *εἰσὶ δὲ σφι φοίνικες πεφυκότες ἀνὰ πᾶν τὸ πεδίον, οἱ πλευῶες αὐτῶν, καρποφόροι, ἐκ τῶν ἢ σιτία και οἷ νον ἢ μέλι ποιοῦνται· τές συκέων τρόπον θεραπεύεσι· τω τε ἄλλα ἢ φοινίκων τές ἔρσενας ἕλληνες καλέεσι, τέτον τὸν καρπὸν περιδέεσι τῆσι βαλανηφόροισι τῶν φοινίκων, ἵνα πεπαίνηται σφὶ ψην την βάλανον ἐσδυνων, και μὴ ἀποῤῥέη ὁ καρπός ὁ τὲ φοίν.κ&.. Ψῆνα γαρ δὴ φήρεσι ἐν τῷ καρπῷ οἱ ἔρσενες, καθάπερ δή οἱ ὄλυνδοι.* hoc est: 'In Babylonis agris Palmæ magna ex parte fructiferæ proveniunt, ex quibus non solum vinum, mel, cibum conficiunter, sed etiam eodem modo, quo Ficus, curantur. Harum uti aliarum arborum masculas Græci vocant, quarum fructus Palmæ fructiferæ alligant, ut earum fructus maturet Culex subiens, ne ex arbore is defluat; ferunt enim Palmarum mares Culices, quemadmodum Caprifici.' En itaque quo pacto sine apicum affectione, sine ullo conjugio Palmis fructiferis, ne palmulas ante maturitatem amittant, per hos *ψῆνας* succurritur. Quo profecto Herodoti testimonio confirmatum habemus, neque in Ægypto, et in circumpositis provinciis Palmas fructiferas a sterilibus affici. Neque Bodæi a Stapel sententia laudabilis apparet, qui Herodoti fidem derogans magis Theophrasto utpote Botanico, quam Herodoto Historico credendum esse statuit. 'Nemo,' inquit, 'facile negabit, Theophrasto hac in re majorem deberi fidem, quam Herodoto. Historicus Herodotus; Botanicus Theophrastus: cuilibet vero in sua arte credendum.' Numquid Historico mentiri licet, Botanico nequaquam? Mihi contra videtur fides quam amplissima esse Herodoto habenda, tum quod naturali modo caprificationis exemplo, qua et illa tempestate et hoc etiam tempore in tota Græcia nihil clarius percipitur, istam Palmarum culturam explicaverit, tum potissimum quod non ea quæ ab aliis percotando acceperat, sed quæ ipse viderat, scripta relinquerit. Theophrastus vero ex aliorum relatione ea Palmarum conjugia litteris mandavit, ut et ipse fassus est: *ἢ γαρ*, inquit, *ἐν βαβυλῶνί φασιν, ὅπε οἱ φοίνικες πεφύκασι.* Quæ ad hunc modum redduntur: 'quippe apud Babylonem, ubi Palmæ nascuntur, sic esse affirmant.' Caprificantur itaque Palmæ in Ægypto, in Syria, et alibi, quemadmodum in Græcia Ficus, ut Culices qui masculæ Palmæ floribus innascuntur, ad fructiferæ poma delati ea terebrent, et ut ad maturitatem perducantur, præstant. Ideo etiam spathæ circunquaque abscinduntur, ut per vulnus succi pars egeratur, et sole ac aere molliusculi embryones facilius frui possint."

III. " That some of the Palms produce fruit, where there are no stamina, in corresponding plants, as the *Toddapanna*."

" Sed quid argumenta quæro, quando res clara et manifesta in Palmis quartæ differentiæ habetur? Toddapanna petalis apicibusque destituta fructus producit quotannis, neque tamen in eodem genere alia adest cognata et maritalis Palma, a quibus effluvia ad illam transmittantur."

This rests upon the authority of a bad figure and description in the Hortus Malabaricus, and several other plants in that work are represented without stamina, and yet made to produce fruit, probably from the painter's taking his picture of the flower when the stamina had fallen off. *Such* are the *futile objections* raised against this doctrine!

As some may feel curious to learn yet more the train of reasoning against the sexes of plants, I shall proceed on to his explanation of the other unisexual flowers.

" Quinque genera flore imperfecto instructa, quorum species aliæ fructum, aliæ apices ferunt, perpendenda aggredior, *Morum* nempe, *Juniperum*, *Ficum*, *Cannabim*, et *Lupulum*, in quibus hoc præstare conabor, ut sine cognatarum stirpium apicibus embryonem perfectum fieri ostendam. Hoc si exitu perfecero, de reliquis cunctis, quas brevitatis gratia prætermitto, id ostendisse pro certo habebo.

" *Morus* itaque perraro in eadem stirpe in qua fructus, ut constituit Tournefortius, amenta producit, (hoc enim in una tantum specie observavi) sed plerunque in peculiari planta, quæ præter apices nihil aliud gignit. Quæ vero *Morus* fructum producit, cum tuba tantum donatum habet. Cum porro *fructiferæ Mori* passim occurrant, *steriles* tamen stirpes infrequentes sunt, et plerunque quadraginta aut sexaginta stadiis distare eas inter se vidi. Nam, cum *sterilis* vermibus nutriendis minus aptas frondes producat, coloni qui sobolem propagari hac ratione ignorant, cum *fertilis Mori* stolones cum sua terra evulsos plantantes mergis utantur, ei non solum cultum aliquem non exhibent, sed vel extirpant vel in fœcundas inserunt. Quare perraro occurrit, neque in cultis, sed ut casu a *fertilis Mori* semine jacto nascitur, aut secus agrorum lacunas cernitur, aut inter vepreta. Ex iis itaque tam paucis *sterilibus Moris* innumerabilia corporum seminalium effluvia emanare necesse est, quibus magnum hoc circunfusi aeris spatium ita repleatur, ut non solum *Mori* quæ minori intervallo distant, sed etiam illæ quæ quam longissimo spatio seponuntur, eandem corpusculorum partem accipiant, et æqualiter fœcundentur. Ad quod præstandum non solum apices, sed neque ipsæ frondes, rami, truncus, et radix, si in apicum corpuscula abirent, sufficerent. Præterea cum in his regionibus *fertiles Mori* plures sint, ut *Morus alba* J. B. 1. 119, *Morus fructu albo, minori, ex albo purpurascente* Tournef. *Inst.* R. *Herb.* 589, *Morus fructu nigro* C. B. *Pin.* 459, *sterilis*, ut mihi hactenus compertum est, una tantum, qui fieri potest, ut apicum corpuscula, quæ eadem materia constant, paternumque (ut ita dicam) spiritum gerunt, dissimilibus speciebus nullam vim communicent, ex qua aliqua sequatur in fructu dissimilitudo? Semper enim eadem figura, colore, et magnitudine crescit? Quod fane in omnibus animantibus contra fit.

Sed de *Moro* jam satis: transeamus ad *Juniperum*, cujus genus inter eas quoque plantas est collocandum, quarum aliæ amenta producunt, aliæ fructum. Quæ agitur julos sive amenta gignit, ea primo vere fundit. *Fertilis* autem a vere fructum edere incipit, neque per æstatem cessat, sed novos semper fructus emittit. Nascitur autem promiscue in montibus utraque; sæpe tamen in hortos transferuntur, et seorsum magno adeo spatio cultas vidimus, ut sæpe inter *fertilem* et *sterilem* triginta stadiorum spatium aut quadraginta intercederet. Cum igitur *Juniperus fertilis* tota æstate baccis onusta reperiatur, quarum aliæ jam maturæ sunt, aliæ acerbæ, nonnullæ minores, multæ minusculæ, quæ tamen omnes subinde crescunt, et maturitatem habent, necesse est, ut seminalia *sterilis* effluvia a ventis jugiter subministrentur, quibus affecti embryones se se explicare possint. At unde hæc depromentur, cum *sterilis* primo vere floreat, et semel tantum, ejusque seminalis pulvisculus tum a ventis tum a pluviis dissipatus sit? Nullam itaque in *Juniperus* fieri apicum communicationem apparet, sed *Juniperus fertilis* ob eam, qua, ut indicaturus sum, oleosa et volatili materia referta est, suos explicat embryones, et ad perfectionem perducit.

Sequitur tertio loco de *Ficu* disputatio, in quo profecto genere non obscura est apicum natura; nam *Ficus sativa* (quam in tertio libro clarius et plenius exponemus) sine apicibus quibus privatur, poma producit, quæ semper maturitatem habent: at *Caprificus* grossos fert, in quibus stamina apicesque occultantur, qui tamen nunquam coqui, perficique possunt, Illud etiam accedit, ut tubæ in pomorum cavitate positæ sint, et ita carne undequaque circunsepiantur, ut clarissime appareat, naturam hoc potissimum spectasse, nequid crassioris corporis, viis undique interceptis, extrinsecus adveniens admitteretur. Nam, cum in aliis stirpibus tubarum oscula in aere patula reliquisset, ut facilius aer in fructus cavitatem ferretur, in *Ficubus* tubas ab aere subduxit, et in fructus cavitate seposuit, uno tantum relicto in fundo foramine, quà aer ingressus tubas embryonesque contentos liquores in motum cieret. Neque tamen apices adjecit, ut in *sylvestrium Ficuum* genere, ne fortasse apicum pulvisculo dulcissima caro male affecta gustatu minus grata evaderet. Quin eos in grossis collocavit, ne a ventis, quorum patrocinio tota hæc opinio innititur, ulla apicum corpuscula ad illa poma deferrentur. Quare sive *Ficus* apices gignentes spectemus, quæ sane perraro occurrunt, neque enim in Italia, ut in Græcia ficetis interseruntur; sive eas quæ apicibus privantur, ab apicibus embryones nequaquam affici manifestum relinquitur, certumque.

Nunc de *Cannabe* dicamus. Dividitur *Cannabis* in duas species, in *Cannabim marem* J. B. 3. 447, et in *Cannabim sterilem* Dod. *Pempt.* 535, quæ passim in agris cultæ occurrunt, non seorsum nascentes, ut de aliis demonstratum est, sed simul; nam ex *fertilis* semine jacto utraque nascitur. *Cannabis* porro *sterilis* citius quam *fertilis* fruticat, et utriculos, quibus apices includuntur, exhibet, deinde, nisi carpatur, contabescit. Quare coloni eam metunt, quoniam arescendo ineptior evadit, relictis fœcundis stirpibus, quæ facile, nondum etiam editis fructibus, viridiore colore, grandioribus ramis, densioribusque foliis internoscuntur. Hæ autem stirpes nullo *sterilis* pulvisculo affectæ quam uberrimos fructus producunt. Quin longo usu apud colonos exploratum esse accepi, cum *steriles Cannabes* fructiferis insertæ relinquuntur, cultoribus fructiferas mitius respondere; quoniam liberiore aere frui nequeunt, densissimæ siquidem hæ stirpes seminantur.

Restat *Lupuli* ratio. Duæ quoque in hoc genere occurrunt *Lupuli*, una quæ amenta producit, et vocatur *Lupulus fœmina* Cam. *Epit.* 934; altera sine amentis fructus ferens, quam *marem Lupulum* Casp. Bauhino auctore *Pin.* 298 nuncupant. Fœcundari autem *marem* a *sterilis Lupuli* pulvisculo tradunt. Qua autem ratione hoc contingeret, cum a nemine doceremur, extiterunt nonnulli, qui ad hunc modum fieri posse opinati sunt. Ex Insulis Sequanæ et Matronæ, in quibus *Lupulus sterilis* nascitur, ventorum ope apicum corpuscula ad Hortum Regium Parisiensem, in quo *Lupulus mas* colitur, deferuntur. Accedente vero aura maritali, *Lupuli* fructiferæ embryones qui naturaliter deorsum pendent, erigunt se se, et squamæ, quæ ita positæ sunt, ut illabentem pluviam hinc et hinc ab embryonibus declinent, se expandunt; tunc tubæ patentibus osculis hiant,

' Exceptantque leves auras, et sæpe sine ullis
Conjugiis vento gravidæ (mirabile dictu!)'

fiunt. Sed hæ ex Philosophicis fontibus haustæ sententiæ non videntur. Nec enim his difficultatibus nobilissima naturæ opera involvenda sunt. Ego tamen hæc omnia, quæ nulla ratione fieri posse apparet, ultro darem atque concederem, si illud explanaretur, quod profecto me fugit, qua ratione ex suis involucris embryones protrudantur, quibus succis grandiusculi facti tubas explicent. Hæc enim seminalia corpuscula intra fructus cavitatem deferri non possunt, nisi per tubas; tubæ autem se se explicare nequeunt, nisi intra fructum succi ingrediantur. Quare, antequam ad embryones deferantur seminalia corpuscula, embryones esse jam fœcundos, necesse est ut fateamur, Verum hoc de *Palmis* agentes plenius et clarius explanabimus.

Concludatur itaque *Morum, Juniperum, Ficum, Cannabim, Lupulum* sine apicum pulvisculo fructus gignere, et ad maturitatem perducere. Si igitur hoc luce clarius esse ostendi, necesse est ut plantas sine apicibus fœcundari fateamur." To condense his reasoning.

His first argument is derived from the MULBERRY. He says, " There are *many kinds* of these, and if there was any truth in the marriage of plants, these by intermixing would give a *cross-breed*, whereas each sort always produces its *own kind*."

Had Pontedera made the experiment, he would have found the *hybrid breed* he speaks against.

Of the JUNIPER he mentions, " that the female plant often produces at a very considerable distance from the male trees." Hence he concludes, " That the plant is so replete with volatile oily materials, that this is sufficient of itself to feed the embryos, without the assistance of the nutritive anthers, so necessary in other flowers."

A more careful observation, and direct experiment, would have shewn that the insulated Juniper-tree would not produce its berry.

Respecting the FIG, he makes *caprification* to depend upon the flies admitting air to the embryos, or to the conveyance from them, of the nutritive juices from the male, or wild fig.

Of the HEMP he denies " that the intermixture of the male and female plants has any effect."

And

And this Doctrine, more recently yet, the learned ALSTON has endeavoured to overturn.*

Linnæus's direct experiment in this Essay proves the *fallacy* here. Of the HOP, he says, " that the female produces its *cones of flowers* equally well when separated from the *male* plant, as Tournefort found in the Royal Gardens of Paris." This arose from the cone of the hop being a *calyx*, which grows equally in both instances; but the seeds so produced have not been found to vegetate.

The reader now sees upon what flimsy ground the opposition to the sexes of plants is founded, and is enabled to form his own conclusion, as to the *truth of this doctrine*, so admirably *confirmed* as it has been by LINNÆUS.

Linnæus, in the Hortus Cliffortianus, page 441, however, does his opponent ample justice as an accurate botanist. " Clarissimus PONTEDERA, qui *oculatissimus* est auctor, et in examinando flores *nulli inferior*."

* The arguments against the sexes of plants, very similar to those of Pontedera, are collected by the ingenious Professor ALSTON, in his " *Tyrocinium Botanicum*," and in a Dissertation on the Sexes of Plants, to be found in the first volume of the " Edinburgh Physical and Literary Essays." In page 250 of that essay, ALSTON says, " I shall pass a variety of later authors who have treated on this subject; and come to the most strenuous defender of the sexes of plants, who has collected all the arguments for it that perhaps can be advanced, and pretends to have demonstrated it fully: I mean the famous and very learned Carolus Linnæus, professor of medicine and botany in the university of Upsal, fellow of a great many philosophical societies; and certainly one of the greatest botanists of this age. For this great man thus writes: " Antheras et stigmata constituere sexum plantarum, a palmicolis, Millingtono, Grewio, Rayo, Camerario, Godofredo, Morlando, Vaillantio, Blairio, Jussievio, Bradleyo, Royeno, Logano, &c. detectum, descriptum, et pro infallibili assumptum: Nec ullum, apertis oculis considerantem cujuscunque plantae flores, latere protest; quod demonstratum in Sponsalibus Plantarum, Upsaliæ 1746, in 4to." And elsewhere, " Generationem vegetabilium fieri, mediante pollinis antherarum illapsu supra stigmata nuda, quo rumpitur pollen, efflatque auram seminalem, quæ absorbetur ab humore stigmatis; quod confirmat oculus, proportio, locus, tempus, pluviæ, palmicolæ, flores nutantes, submersi, syngenesia; immo omnium florum genuina consideratio."

" Yet I cannot help thinking this doctrine not capable of demonstration, far less that the *genuina consideratio* of any flower can make it probable: Camerarius himself doubted of it; Tournefort disbelieved it; and Pontedera uses many arguments to refute it."

In order to do away all belief in the sexes of plants, he relates the following experiments.

1. " In the spring 1737, I transplanted three sets of the common *Spinage*, long before it could be known whether they were flowering or seed-bearing plants, from a little bed on which they were raised, into a place of the garden, full eighty yards distant, and almost directly south; there being two hawthorn and three holly hedges, all pretty thick and tall, between them and their seed-bed; and no other spinage in the garden, nor so near them by far: all the three proved fertile plants, and ripened plenty of seeds. I sowed them; they grew and prospered as well as any spinage-seed possibly could do. This, I own, made me at first call in question the sexes of plants, which I *formerly* too implicitly believed.

2. " The same year, a few plants of the common hemp, which I had raised for a specimen from the seed, being accidentally destroyed when very young; and finding afterwards, about the end of June, a pretty strong but late plant of *Hemp*, growing in the inclosure to the east of Holyrood-house, commonly called the Bowling-green, by itself: I caused great care to be taken of it, there not being that year any hemp raised within a mile of it, that I could find. This plant grew luxuriantly; and, though bad weather in the autumn made me pluck it up a little too soon, yet I got about thirty good seeds from it, which the succeeding spring produced as thriving male and female plants, as if the mother-hemp had stood surrounded with males. And,

3. " In the spring 1741, I carried two young seedling plants of the French *Mercury*, long before there was any in flower, from the city physic-garden, the only place where it was then to be found in this country, to the king's garden at the Abbey; which are more than seven hundred yards distant from one another, with many high houses, trees, hedges, and part of a hill between them: and planted one of them in one inclosure, where it was shaded from the sun the greatest part of the day; and the other, in another, twenty-five yards distant, exposed to the south and west. Both plants ripened fertile seeds; and the last shed them so plentifully, that it proved a troublesome weed for several years, though none of the species was to be found in that garden, for more than twenty years preceding."

In answer to such stubborn facts, it were to be wished, that the learned professor had continued from year to year these experiments, and multiplied them, and under different circumstances, and then he would have fixed conviction on the mind. As the case now stands, these experiments are contradicted by the experiments of Millar recorded in his Dictionary, under article Generation, also by those of Linnæus in this Essay.

His experiments on the *Spinach* and *Dog's Mercury*, (of the *Hemp* we shall speak when we come to Linnæus's experiment on that plant), were either defective as not being made sufficiently apart for the winds, or insects, to perform the office of bridegroom; or, as later observers remark, that even on Pistilliferous plants, *males* will occasionally appear, especially in the *Spinach*, and hence the fallacy of the experiments, when they turn out contrary to the Sexes of Plants.

Speaking of the *Spinach*, BARON DE GLEICHEN, in his " Observations Microscopiques," says, " J'ai aussi fait avec cette plante l' experience ordinaire, en ôtant les plantes mâles, pour empêcher les plantes fémelles d'être fécondées. Dans ce dessein j'ai pris environ quarante grains de la semence herissée, et au lieu de les semer, je les ai mis en terre en rang piéce per piéce séparement, dans une distance assés considerable l'un de l'autre. Aussitôt que je decouvris une plante mâle, je l'arrachai, et l'ecartai, jusqu'à ce que mes plantes furent enfin reduites au nombre de douze, des quelles je fus bien assuré, que ce n'étoit que des fémelles. Je visitai bien souvent ces plantes, et j'ouvris de tems en tems quelques œufs seminaux, que j'examinai à l'aide du Microscope, et que je trouvai premiérement tous vuides, et bientôt après tous fécondés. Aussitôt je visitai mes plantes encore une fois bien soigneusement pour voir, s'il n'y avoit pas parmi elles quelque amant caché. Mais sans decouvrir une seule plante mâle, je fus bien surpris de voir, que presque la moitié de mes plantes étoient des Hermaphrodites, dont les vaisseaux de la poussière avoient poussé en grand nombre entre les fleurs fémelles. J'ordonnai d'abord à mon jardinier de chercher sur une grande couche d'un autre jardin, semée d'épinars, s'il y trouveroit plus de ces Hermaphrodites, et elles ne manquerent pas là non plus, et produirent de la semence meure, aussi bien que celles-là. Je la cueillis soigneusement, la semai l'année suivante et j'en retirai en plus grande partie des Diphytes avec quelques Hermaphrodites. J'aurois fait plûtôt cette decouverte, et par là je me serois dispensé de faire une experience superfluë, si je n'avois pas ignoré alors, ce que j'ai lû dans la suite dans la remarque à la Planche XL. de l'œuvre de Blakwell, savoir que Camerarius *avoit trouvé plus d'une fois, mais pourtant pas trop souvent, des Hermaphrodites parmi les plantes d'Epinars.* Cependant cette nouvelle experience sert à nous rendre plus attentifs, et à nous dessiler les yeux dans des pareils essais. Mr. Möller, qui s'est avisé de combattre le Systeme de fécondation, en appellant aussi à la semence féconde, qu'il avoit obtenuë d'une seule plante d'Epinars trouvée par hazard parmi les plantes de pastenade, n'auroit pas eu cette vaine joye, s'il avoit examiné cette plante plus souvent et avec plus d'attention,

In order rightly to understand this subject, it is necessary properly to comprehend the *nature* of *vegetable bodies.*

This will be best understood, if we trace downwards the great *Chain of Nature*; that is, if we begin with man, next consider quadrupeds, then birds, fishes, reptiles, worms, insects, and lastly, *descend* to *vegetables.*

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que probablement il n' a pas fait. Il est aussi vraisemblable, que ce qui arrive ici parmi les plantes d'Epinars, arrive plus souvent parmi les Diphytes, et je ne crois pas me tromper, en supposant, que ma plante de Chanvre XCVIII. que j'avois quittée fémelle et trouvée mâle quelque tems après, a été sujette à la même metamorphose. Nous avons vû en son lieu la même chose dans les Monophytes, comme dans le Mays et dans la noisette, où ce changement de sexe est plus concevable, que celui des Diphytes, puisque dans celles-là il peut dependre d'une confusion ou d'une distribution irréguliére de la seve mâle et fémelle et des organes sexuels, qui se trouvent ensemble dans la même plante, mais dans celles-ci, c'est à dire dans les Diphytes, où chaque plante est pourvue de ses propres vaisseaux et de ses organes sexuels, ce changement devient un enigme du quel j'abondonne l'explication aux Botanistes, que leur métier oblige à instruire le monde là dessùs. Aussi jugeront-ils cette peine très necessaire, s'ils considérent les consequences importantes, qu'on en peut tirer au sujet de la génération, et que Mr. Linnæus nous a fait entrevoir par sa conjecture. Car ce Savant a soupçonné, que le sexe originaire de toutes les plantes êtoit celui des Hermaphrodites."

Spalanzani, a philosopher of the highest character, after numerous experiments on *bisexual* flowers, where he found that removing the anthers produced always barrenness of the seeds, proceeded upon those plants which staggered Alston. Like that professor, he experienced a contradiction to the general doctrine, but confesses an accident not very uncommon in the unisexual flowers, viz. the occasional production of stamina amongst the females. " It has been observed," says Spalanzani, " by Linnæus, Haller, Duhamel, and others, that male flowers are not very infrequently found upon female individuals: a root of spinach, of which I shall speak below, furnished me with a remarkable instance; and the hemp in question is subject to the same accident, as I was informed by Mr. Bonnet, in a letter dated August 15, 1778. The letter gave me notice of an experiment which he undertook upon hemp, after I had communicated mine to him. The paragraph to which I allude is the following: " I began this year some experiments upon hemp. I have followed the method which I employed for rearing the insects on plants in solitude. My plants were covered with large tubes of glass, hermetically sealed at the top, and with the bottom sunk in the earth. But fortune did not favour me—instead of a female I had a male plant in one instance, and in another a plant of great expectation, after putting forth many flowers with pistils, produced some with stamina, close to the former, which totally disconcerted the experiment."

Speaking of the *spinach* he found the same thing. " In one of my daily visits to my three plants, I perceived upon one individual an unexpected conjunction of male and female flowers, growing close together, and forming very elegant groups. The blossoms with pistils were very conspicuous, but those with stamina were so little advanced, that they could not be distinguished by the naked eye. Both sorts appeared to be equally numerous, but the union extended only to two branches—all the rest bore female blossoms only. I may here incidentally remark, that the *great abundance* of the male flowers, in the present case, is a very singular phænomenon. I have read in botanical writers, that a few male flowers are sometimes found in company with females, but never that they amount to an equal number, a circumstance that excited my admiration with respect to this individual; for I counted two hundred and seventy-five male buds."

But all his experiments on the *Dog's Mercury*, or *French Mercury*, turned out according to the now prevailing opinion.

" The next and last plant producing male and female individuals, on which I made experiment, is the Mercurialis Annua (*French Mercury*). Five very small plants were removed from a garden, on the 22d of August, into five pots. They were managed in the same manner as the spinach during the winter (xxxii), and were all so far advanced at the beginning of spring, that there was no difficulty in distinguishing the males from the females; of the latter there were three, and these alone were preserved. By the 24th of March blossoms with pistils appeared upon several branches, growing out of the axillæ of the leaves, and in a few days more the number was exceedingly increased. They were borne upon short flower-stalks, and, as usual, consisted of two small seeds or spherical anthers. They were of a green colour and hairy. But here the event was just contrary to what happened in hemp and spinach. The greater part of the blossoms dropped prematurely; of the few that remained the seeds grew for some time, but fell before they were ripe, and when sown, *they did not spring.* As this took place before the male plants in the gardens and the fields about Pavia were in flower, I began to suppose mercury to be one of those numerous vegetables, which cannot propagate the species without the powder of the stamina. Meanwhile my three plants continued to put forth new branches, and the old ones, instead of withering, vegetated with great vigour; but still the seeds dropped prematurely. This gradual evolution and production of fresh branches, was of such long continuance, that they shewed no tendency to decay, but were producing blossoms with pistils when the mercury in the fields was in flower. I therefore began to entertain hopes, that the seeds now put forth, and those which should follow, would succeed better than the earlier seeds, more especially as the pots were exposed to the open air upon a window, and looked into a garden, in which grew several male individuals of this species. But my expectations were disappointed: as long as the three plants continued to thrive, the seeds dropped almost as soon as they appeared; nor did one of those that were sown *ever come up.* I repeated the experiment *two succeeding years* with the same event.

" It therefore became necessary to vary the mode of conducting it. Being more confirmed in my suspicion, that the sterility arose from want of pollen, which, though it was at no great distance, did not reach my plants, I determined to bring it nearer; without, however, setting individuals of the different sexes in the same place. Two *male* plants of mercury, reared the next year in two pots, were placed on the outside of a window, and two *females* growing likewise in pots, were set on the outside of another window. Both windows belonged to one room, and had the same aspect. The four roots of mercury were nearly of the same age, and of the same size. And I waited with great anxiety to see whether the *females*, on account of their vicinity, would be impregnated by the *males*. The seeds were constantly falling, but not in such abundance as in the former experiment, when the *males* were at a much greater distance. Those which adhered went on thriving, and seemed as if they would ripen; and they did accordingly arrive at maturity, and, what is of more consequence, were more productive; for soon after I had sown them in a pot, I had the pleasure of seeing *them spring*. It therefore appeared probable, that the vicinity of the males to the females had been instrumental in occasioning fecundation: their influence could scarce be derived from any source, besides the action of the contiguous pollen.

" This experiment obviously required another: it was proper to bring the different individuals *nearer* to each other; I accordingly placed two *males* and two *females* upon the same window. It now became manifest, how much influence the *approximation* of the two sexes has upon fecundation. The two females retained *almost all* the seeds which were produced at this time, exceeding an hundred. The seeds grew perfectly ripe, and when put into the ground, were unfolded into as many plants."

In

In the more *perfect* animals are many instruments, and various senses, which are denied to the lower tribes of animated beings.

Thus SERPENTS and FISHES have *no feet.*

There is *no nose* in INSECTS and WORMS.

There are many WORMS without *eyes.*

Thus the farther we descend in this chain,* the more simple the last links will appear; so that in worms, as the *Tænia, Gordius,* and *Lumbricus,* many parts are wanting which appear in higher animals, hence called perfect, and in the remotest limits of the animal kingdom, we observe the *Zoophyta* nearly approaching the *vegetable,* having diffused branches, radical at the base, unfolding into *flowers,* in one word, more like to a *plant* than an *animal,* unless in this they approach the higher order of animals, that by means of *nerves* they have *voluntary movement,* hence these *animal flowers* have sensation, and vibrate without the medium of the external air, which affords motion to plants, some of these being placed in

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* For a full account of the "Chain of Nature," vide the admirable "*Contemplation of Nature,*" by the Philosopher BONNET, who has ably discussed this subject. But the different functions of animated beings will be seen at one view in the following table.

A TABLE OF THE FUNCTIONS, OR GRADATION, OF LIVING BODIES.

1. DIGESTION.	Living Bodies	which have	One or more *stomachs,* easily distinguishable from the *œsophagus* and *intestinal canal*	Man.
				Quadrupeds.
				Cetaceous animals.
				Birds.
				Crustaceous animals.
			A *stomach* distinguishable only by *certain expansions* from the *œsophagus* and *intestinal canal*	Oviparous quadrupeds.
				Serpents.
				Cartilaginous fishes.
				Fishes, properly so called.
			An alimentary canal, *not distinguishable* into œsophagus, stomach, and intestines	Insects.
				Worms.
				Zoophytes.
			Neither *stomach* nor *intestines*	PLANTS.
2. NUTRITION.	Living Bodies	whose nutricious juices are absorbed.	By *vessels* beginning from *internal cavities*	Man.
				Quadrupeds.
				Cetaceous animals
				Birds.
				Oviparous quadrupeds.
				Serpents.
				Cartilaginous fishes.
				Fishes, properly so called.
				Insects.
				Crustaceous animals.
				Worms.
			By *vessels* opening on the *external surface*	PLANTS.
3. CIRCULATION.	Living Bodies	with blood	Having a *heart* with *two ventricles* and *two auricles*	Man.
				Quadrupeds.
				Cetaceous animals.
				Birds.
			With *one ventricle* divided into several cavities and *two auricles*	Oviparous quadrupeds.
				Serpents.
			With *one ventricle* and *one auricle*	Cartilaginous fishes.
				Fishes, properly so called.
		with a whitish fluid	Whose *heart* is formed of one longitudinal vessel, tuberous and contractile, in which there is a *whitish fluid* instead of *blood*	Crustaceous animals.
				Insects.
				Worms.
				In some crustaceous animals there is observed something resembling a heart.
		with juices	In which *no heart* has been yet observed, but only vessels filled *with juices of a nature different from that of blood*	Zoophytes.
				PLANTS.
4. RESPIRATION.	Living Bodies	which respire	By *lungs* free from all adhesion, and spungy	Man.
				Quadrupeds.
				Cetaceous animals.
			By *lungs* free from all adhesion, vesicular and muscular	Oviparous quadrupeds.
				Serpents.
			By *lungs* adhering to the ribs, and provided with appendages	Birds.
			By *gills* of different forms	Cartilaginous fishes.
				Fishes, properly so called.
				Crustaceous animals.
			By *stigmata,* or holes in *different rings*	Insects.
				Earth-worms.
			By an opening called *trachea,* or by *external fringes*	Aquatic-worms.
			By *tracheæ*	PLANTS.
			In which there have been discovered neither stigmata nor tracheæ	Polypes.
5. SECRETION.	Living Bodies		There are no bodies in which secretions are not carried on.	All having animation.
6. OSSIFICATION.	Living Bodies	whose skeleton is	*Internal* and *osseous*	Man.
				Quadrupeds.
				Cetaceous animals.
				Birds.
				Oviparous quadrupeds.
				Serpents.
				Fishes, properly so called.
			Internal and *cartilaginous*	Cartilaginous fishes.
			External and *corneous*	Perfect insects.
				Lithophytes.
			External and *cetaceous*	Crustaceous animals.
				Shell-fish.
				Madrepores.
				The greatest part of Zoophytes.
			External and *ligneous*	Plants.
			Which have no *skeleton*	Insects in their first state.
				Worms.
				Polypes.
7. GENERATION.	Living Bodies	which are	*Viviparous*	Men.
				Quadrupeds.
				Cetaceous animals.
			Oviparous, whether the evolution of the eggs takes place within or without the female	Birds.
				Oviparous quadrupeds.
				Serpents.
				Cartilaginous fishes.
				Fishes, properly so called.
				Insects.
				Crustaceous animals.
				Worms.
				Plants.
			Which propagate also by *slips*	Worms.
				Polypes.
				PLANTS.
8. IRRITABILITY.	Living Bodies	which have	A body wholly *muscular* or *contractile*	Greatest part of insects in the first state of their transformation.
				Worms.
				Polypes.
			Muscles covering the *skeleton*	Man.
				Quadrupeds.
				Cetaceous animals.
				Birds.
				Oviparous quadrupeds.
				Serpents.
				Cartilaginous fishes.
				Fishes, properly so called.
			A *skeleton* covering the *muscles*	Perfect insects.
				Crustaceous animals.
			No muscular power	PLANTS.
9. SENSIBILITY.	Living Bodies	which have	*Nerves* and *brain* easily distinguishable from the *spinal marrow*	Man.
				Quadrupeds.
				Cetaceous animals.
				Birds.
				Oviparous quadrupeds.
				Serpents.
				Cartilaginous fishes.
				Fishes, properly so called.
			Nerves and brain *scarcely distinguishable* from the spinal marrow	Insects.
				Crustaceous animals.
				Worms.
			In which there have not yet been discovered *nerves, brain,* or *spinal marrow*	Zoophytes.
				PLANTS.

the abysses of the sea, as the *Serratula,* which has been so admirably illustrated in the works of Ellis.

Plants so nearly approach the lower tribe of *Zoophyta,* that it is hardly possible to distinguish the one from the other.

Plants have no stomach or intestinal tube, but absorb fluids by their roots, and also throughout their whole surface. Hence a small cutting of a branch placed in water imbibes nourishment at its several pores. So neither the *stomach* nor *intestines* of the *Sertulariæ* or *Polypi* have yet been demonstrated. *Plants* have no heart, yet they have vessels in which flows the sap, which rises to the extreme branches, so neither can any *heart* be discovered in this *lower tribe* of *animals.*

Hence it appears, that the *vegetable kingdom* only differs from the *animal* in having *no nerves* for *voluntary* movement.*

He who inquires into the *generation* of *plants,* should also consider what passes in the *animal* kingdom. We see *insects* undergo a *metamorphosis,* and when this is accomplished, these become *sexual.* And when these have undergone this change, for example, the *butterflies,* they are not more *dissimilar* from their *eruca,* or *larva,* than *flowers* are to their *plants.*

The *moth* of the *silk-worm* has *no mouth,* and after its *metamorphosis* its whole employment is to *propagate* its kind.†

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* In the "*Philosophia Botanica,*" Linnæus makes the same discrimination, "*Lapides* crescunt. *Vegetabilia* crescunt et vivunt. *Animalia* crescunt, vivunt et *sentiunt.*" That is, *Minerals* grow. *Vegetables* grow and live. *Animals* grow, live, and feel. The perceptivity, or feeling of plants, has been maintained by some writers, as Dr. Percival and the Bishop of Landaff. Vide the learned Bishop's "*Chemical Essays,*" vol. v. p. 158; also the "*Philosophy of Botany,*" chapter "On the *supposed* Perceptivity of Plants."

† Caterpillars may be easily distinguished from worms or maggots, by the number of their feet; and by their producing butterflies or moths. When the sun calls up vegetation, and vivifies the various eggs of insects, the *caterpillars* are the first that are seen, upon almost every vegetable and tree, eating its leaves, and preparing for a state of greater perfection. They have feet both before and behind; which not only enable them to move forward by a sort of steps made by their fore and hinder parts, but also to climb up vegetables, and to stretch themselves out from the boughs and stalks, to reach their food at a distance. All of this class have from eight feet, at the least, to sixteen; and this may serve to distinguish them from the worm tribe. The animal into which they are converted, is always a *butterfly* or a *moth*; and these are always distinguished from other flies, by having their wings covered over with a painted dust, which gives them such various beauty. The wings of *flies* are transparent, as we see in the common flesh-fly; while those of *beetles* are hard, like horn; from such the wing of a *butterfly* may be easily distinguished; and words would obscure their differences.

The *life* of a caterpillar seems one continued succession of *changes*; and it is seen to throw off one skin only to assume another; which also is divested in its turn: and thus for eight or ten times successively. We must not, however, confound this changing of the skin with the great *metamorphosis* which it is afterwards to undergo. The throwing off one skin, and assuming another, seems, in comparison, but a slight operation among these animals; this is but the work of a day; the other is the great adventure of their lives. Indeed, this faculty of changing the skin, is not peculiar to caterpillars only, but is common to all the insect kind; and even to some animals that claim a higher rank in nature. We have seen the lobster and the crab out-growing their first shells, and then bursting from their confinement, in order to assume a covering more roomy and convenient.

With respect to caterpillars, many of them change their skins five or six times in a season; and this covering, when cast off, often seems so complete, that many might mistake the empty skin for the real insect. Among the hairy caterpillars, for instance, the cast skin is covered with hair; the feet, as well gristly as membraneous, remain fixed to it; even the parts which nothing but a microscope can discover, are visible in it; in short, all the parts of the head; not only the skull, but the teeth.

In proportion as the time approaches in which the caterpillar is to cast its old skin, its colours become more feeble, the skin seems to wither and grow dry, and in some measure resembles a leaf, when it is no longer supplied with moisture from the stock. At that time, the insect begins to find itself under a necessity of changing; and it is not effected without violent labour, and perhaps pain. A day or two before the critical hour approaches, the insect ceases to eat, loses its usual activity, and seems to rest immoveable. It seeks some place to remain in security; and no longer timorous, seems regardless even to the touch. It is now and then seen to bend itself and elevate its back; again it stretches to its utmost extent: it sometimes lifts up the head, and then lets it fall again; it sometimes waves it three or four times from side to side, and then remains in quiet. At length, some of the rings of its body, particularly the first and second, are seen to swell considerably, the old skin distends and bursts, till, by repeated swellings and contractions in every ring, the animal disengages itself, and creeps from its inconvenient covering.

How laborious soever this operation may be, it is performed in the space of a minute; and the animal, having thrown off its old skin, seems to enjoy new vigour, as well as having acquired colouring and beauty. Sometimes it happens that it makes a new appearance, and colours very different from the old. Those that are hairy, still preserve their covering; although their ancient skin seems not to have lost a single hair; every hair appears to have been drawn, like a sword from the scabbard. However, the fact is, that a new crop of hair grows between the old skin and the new, and probably helps to throw off the external covering.

The caterpillar having in this manner continued for several days feeding, and at intervals casting its skin, begins at last to prepare for its change

In the same manner all *plants* undergo a *metamorphosis,* they shake off their *larva* state, and

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change into an AURELIA. It is most probable that, from the beginning, all the parts of the *butterfly* lay hid in this insect, in its reptile state; but it required time to bring them to perfection; and a large quantity of food, to enable the animal to undergo all the changes requisite for throwing off these skins, which seemed to clog the *butterfly* form. However, when the *caterpillar* has fed sufficiently, and the parts of the future *butterfly* have formed themselves beneath its skin, it is then time for it to make its first great and principal change into an AURELIA, or a CHRYSALIS, as some have chosen to call it; during which, as was observed, it seems to remain for several days, or even months, without life or motion.

Preparatory to this important change, the *caterpillar* most usually quits the plant, or the tree on which it fed; or at least attaches itself to the stalk or the stem, more gladly than the leaves. It forsakes its food, and prepares, by fasting, to undergo its transmutation. In this period, all the food it has taken is thoroughly digested; and it often voids even the internal membrane which lined its intestines. Some of this tribe, at this period also, are seen entirely to change colour; and the vivacity of the tints in all, seem faded. Those of them which are capable of spinning themselves a web, set about this operation; those which have already spun, await the change in the best manner they are able. The web or cone, with which some cover themselves, hides the AURELIA contained within from the view; but in others, where it is more transparent, the caterpillar, when it has done spinning, strikes into it the claws of the two feet under the tail, and afterwards forces in the tail itself, by contracting those claws, and violently striking the feet one against the other. If, however, they be taken from their web at this time, they appear in a state of great languor; and, being incapable of walking, remain on that spot where they are placed. In this condition they remain one or two days, preparing to change into an AURELIA; somewhat in the manner they made preparations for changing their skin. They then appear with their bodies bent into a bow, which they now and then are seen to straiten: they make no use of their legs; but if they attempt to change place, do it by the contortions of their body. In proportion as their change into an AURELIA approaches, their body becomes more and more bent; while their extensions and convulsive contractions become more frequent. The hinder end of the body is the part which the animal first disengages from its caterpillar skin; that part of the skin remains empty, while the body is drawn up contractedly towards the head. In the same manner they disengage themselves from the two succeeding rings; so that the animal is then lodged entirely in the fore part of its caterpillar covering: that half which is abandoned, remains flaccid and empty; while the fore part, on the contrary, is swollen and distended. The animal, having thus quitted the hinder part of its skin to drive itself up into the fore part, still continues to heave and work as before; so that the skull is soon seen to burst into three pieces, and a longitudinal opening is made in the three first rings of the body, through which the insect thrusts forth its naked body, with strong efforts. Thus at last, it entirely gets free from its caterpillar skin, and for ever forsakes its *reptile form.*

The caterpillar, thus stripped of its skin for the last time, is now become an AURELIA; in which the parts of the future *butterfly* are all visible; but in so soft a state, that the smallest touch can discompose them. The animal is now become helpless and motionless; but only waits for the assistance of the air to dry up the moisture on its surface, and supply it with a crust capable of resisting external injuries. Immediately after being stripped of its caterpillar skin, it is of a green colour, especially in those parts which are distended by an extraordinary afflux of animal moisture; but in ten or twelve hours after being thus exposed, its parts harden, the air forms its external covering into a firm crust, and in about four-and-twenty hours, the *aurelia* may be handled without endangering the little animal that is thus left in so defenceless a situation. Such is the history of the little pod or cone that is found so common by every path-way, sticking to nettles, and sometimes shining like polished gold. From the beautiful and resplendent colour, with which it is thus sometimes adorned, some authors have called it a CHRYSALIS, implying a creature made of gold.

Such are the efforts by which these little animals prepare for a state of *perfection*; but their care is still greater to provide themselves a secure retreat, during this season of their imbecility. It would seem like erecting themselves a *monument,* where they were to rest secure, until Nature had called them into a new and more improved existence. For this purpose, some spin themselves a cone or web, in which they lie secure till they have arrived at maturity: others, that cannot spin so copious a covering, suspend themselves by the tail, in some retreat where they are not likely to meet disturbances. Some mix sand with their gummy and moist webs, and thus make themselves a secure incrustation; while others, before their change, bury themselves in the ground, and thus avoid the numerous dangers that might attend them. One would imagine that they were conscious of the precise time of their continuance in their AURELIA state; since their little sepulchres, with respect to the solidity of the building, are proportioned to such duration. Those that are to lie in that state of existence but a few days, make choice of some tender leaf, which they render still more pliant by diffusing a kind of glue upon it; the leaf thus gradually curls up, and withering as it enfolds, the insect wraps itself within, as in a mantle, till the genial warmth of the sun enables it to struggle for new life, and burst from its confinement. Others, whose time of transformation is also near at hand, fasten their tails to a tree, or to the first worm-hole they meet, in a beam, and wait in that defenceless situation. Such caterpillars, on the other hand, as are seen to lie several months in their aurelia state, act with much greater circumspection. Most of them mix their web with sand, and thus make themselves a strong covering: others build in wood, which serves them in the nature of a coffin. Such as have made the leaves of willows their favourite food, break the tender twigs of them first into small pieces, then pound them as it were to powder; and, by means of their glutinous silk, make a kind of paste, in which they wrap themselves up. Many are the forms which these animals assume in this helpless state.

The AURELIA, though it bears a different external appearance, nevertheless contains within it all the parts of the *butterfly* in perfect formation; and laying each in a very orderly manner, though in the smallest compass. These, however, are so fast and tender, that it is impossible to examine without discomposing them. When either by warmth, or increasing vigour, the parts have acquired the necessary force and solidity, the *butterfly* then seeks to disembarrass itself of those bands which kept it so long in confinement. Some insects continue under the form of an aurelia not above ten days; some twenty; some several months; and even for a year together.

The *butterfly,* however, does not continue so long under the form of an AURELIA, as one would be apt to imagine. In general, those caterpillars that provide themselves with cones, continue within them but a few days after the cone is completely finished. Some, however, remain buried in this artificial covering for eight or nine months, without taking the smallest sustenance during the whole time: and though in the caterpillar state no animals were so voracious, when thus transformed they appear a miracle of abstinence. In all, sooner or later, the *butterfly* bursts from its prison; not only that natural prison which is formed by the skin of the aurelia, but also from that artificial one of silk, or any other substance in which it has enclosed itself.

The efforts which the *butterfly* makes to get free from its AURELIA state, are by no means so violent as those which the insect had in changing from the caterpillar into the aurelia. The quantity of moisture surrounding the *butterfly* is by no means so great as that attending its former change; and the shell of the aurelia is so dry, that it may be cracked between the fingers.

If the animal be shut up within a cone, the *butterfly* always gets rid of the natural internal skin of the aurelia, before it eats its way

are seen *naked* in the *flower,* whose only business then is to *increase* and *multiply its kind:* for the exit of the *butterfly* from the *larva,* and the *evolution* of *flowers* is accomplished in the same way.

The *outer bark* (CORTEX) splits, and is converted into a permanent CALYX, which becomes the *outer covering* of the *flower,* and protects the *tender fruit.*

The *inner bark* (LIBER) more pliant, and diaphanous, is further extended into the COROLLA adorned with colours, which placed like the wings of the butterfly, through the medium of the air, vibrates and flutters, which motion otherwise it would not be able to procure.

But the principal parts of the flowering body are the STAMINA and PISTILLA, so much so, that no flower can be said to be without them. This appears to be the case up to the present time, in the examination of so many thousands of flowers, so that there exists no true flower, which does not possess these two organs.

The STAMINA derive their origin from the *ligneous substance* (CORTICAL PART), which was formerly the *inner bark* (LIBER).

This appears most evident in the ASARUM (*asarabacca*), whose *twelve stamina* proceed from twelve fibres found in the composition of the *inner bark.*

Flowers with a plenitude of *corolla* (double flowers) illustrate this doctrine, where the *stamina,* by receiving too much nutriment, are so softened and dissolved, that these become actual *petals,* for the ligneous substance in them is thereby converted into the soft nature of the *liber,* whence petals were, as we saw before, derived.

All *stamina* possess vessels containing *farina,* which indeed they discharge, but not without the strictest observance of the laws of Nature.

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through the external covering which its own industry has formed round it. In order to observe the manner in which it thus gets rid of the aurelia covering, we must cut open the cone, and then we shall have an opportunity of discovering the insect's efforts to emancipate itself from its natural shell. When this operation begins, there seems to be a violent agitation in the humours contained within the little animal's body. Its fluids seem driven, by an hasty fermentation, through all the vessels; while it labours violently with its legs, and makes several other violent struggles to get free. As all these motions concur with the growth of the insect's wings and body, it is impossible that the brittle skin which covers it should longer resist: it at length gives way, by bursting into four distinct and regular pieces. The skin of the head and legs first separates; then the skin at the back flies open, and dividing into two regular portions, disengages the back and wings: then there likewise happens another rupture in that portion which covered the rings of the back of the aurelia. After this, the *butterfly,* as if fatigued with its struggles, remains very quiet for some time, with its wings pointed downwards, and its legs fixed in the skin which it had just thrown off. At first sight the animal, just set free, and permitted the future use of its wings, seems to want them entirely: they take up such little room, that one would wonder where they were hidden. But soon after, they expand so rapidly, that the eye can scarce attend their unfolding, From reaching scarce half the length of the body, they acquire, in a most wonderful manner, their full extent and bigness, so as to be each five times larger than they were before. Nor is it the wings alone that are thus increased: all their spots and paintings, before so minute as to be scarce discernible, are proportionably extended; so that, what a few minutes before seemed only a number of confused, unmeaning points, now become distinct and most beautiful ornaments. Nor are the wings, when they are thus expanded, unfolded in the manner in which earwigs and grasshoppers display theirs, who unfurl them like a lady's fan: on the contrary, those of *butterflies* actually grow to their natural size in this very short space. The wing, at the instant it is freed from its late confinement, is considerably thicker than afterwards; so that it spreads in all dimensions, growing thinner as it becomes broader. If one of the wings be plucked from the animal just set free, it may be spread by the fingers, and it will soon become as broad as the other, which has been left behind. As the wings extend themselves so suddenly, they have not yet had time to dry; and accordingly appear like pieces of wet paper, soft, and full of wrinkles. In about half an hour they are perfectly dry, their wrinkles entirely disappear, and the little animal assumes all its splendor.

Those aurelias which are enclosed within a cone, find their exit more difficult, as they have still another prison to break through: this, however, they perform in a short time; for the *butterfly,* freed from its aurelia skin, butts with its head violently against the walls of its artificial prison; and probably with its eyes, that are rough and like a file, it rubs the internal surface away; till it is at last seen bursting its way into open light; and, in less than a quarter of an hour, the animal acquires its full perfection.

Thus, to use the words of SWAMMERDAM, we see a little insignificant creature distinguished, in its last birth, with qualifications and ornaments, which man, during his stay upon earth, can never even hope to acquire. The *butterfly,* to enjoy life, needs no other food but the dews of heaven; and the honeyed juices which are distilled from every flower. The pageantry of princes cannot equal the ornaments with which it is invested; nor the rich colouring that embellishes its wings. The skies are the *butterfly's* proper habitation, and the air its element: whilst man comes into the world naked, and often roves about without habitation or shelter; exposed, on one hand, to the heat of the sun; and, on the other, to the damps and exhalations of the earth; both alike enemies of his happiness and existence.—A strong proof that, while this little animal is raised to its greatest height, we are as yet, in this world, only candidates for perfection!

Of

Of these vessels, which are called *anthers*, the figures, the cells, the modes of opening, are no less accurately defined, than the capsules of fruits, and the *farina*, like seeds, has its precise magnitude, colour, and figure.

The PISTILLUM derives its origin from the medullary substance in plants, and therefore is placed in the center of each flower; and in this part are always found the rudiments of the seed, which advances by degrees into a fruit.

This part is called the *Germen*, to which is always affixed another part, which is named *Stigma*, and is most in vigour at the period of flowering.

The *medullary*, is the most essential part in vegetables, and is multiplied and extended *ad infinitum*, so that whenever this is lost, the plant of necessity must die.

When considering this subject, we must carefully avoid being led into error by two seeming objections; *first*, as regards the culms of grasses, and other hollow stems, where the medullary part will be found to line the inner part of the bark; and, *secondly*, in large trees, where the trunk is altogether solid, but here the extreme branches have their necessary medulla.

Thus *vegetables*, like *insects*, are changed by a *metamorphosis*, and with this distinction only, that *flowers* remain fixed to one spot, nor are they furnished with *chylopoietic viscera*, as with most insects, and these are also fed by the *parent plants* to which they are *attached*.

Thus it is, that the CORTEX is changed into the CALYX; the LIBER into the COROLLA; the WOOD into the STAMINA; and the MEDULLA into the PISTILLUM.*

Thus it is, that the *fructification* exhibits the common parts of plants *naked* and *unfolded*.

Thus it is, that *fructification* puts an end to growth in that part where it springs, otherwise it would have shot forward into branches, and so on, *ad infinitum*, but now becomes expended here by explicating new and distinct animated bodies, with their seeds.

And since the *seeds* are the *medulla naked* in the *germen*, and *this medulla* requires to be *fed* and *increased* by the *cortical substance*, (whence all nourishment and growth proceeds in plants, as well as animals), hence these *seeds* cannot advance a step without this necessary aid from that active supporter of life, which these have become separated from.

Hence the *medullary seeds* require to receive the *cortical covering* from the *farina* in the *anthers*, which, as we have proved before, is derived from the CORTEX (*outer bark*). How *this investment* takes place has been variously explained.

MORLAND † and others assert, led to it by the doctrine of LEUWENHOOK, that the *farina* enters by the *stigma*, passes along the *style*, and then pervades the tender rudiments of the *seeds*.

That this doctrine is not founded in fact, appears from several observations.

A most evident contradiction is furnished by the AMARYLLIS FORMOSISSIMA (*Jacobean Amaryllis*), which explains this mysterious circumstance.

The flower of the AMARYLLIS, when produced in the hot-house, has its *pistillum* pointing downwards, when from its *stigma* there oozes about midday a *limpid clear drop*, which shortly increases to such a size, that one expects every instant to see it fall.

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* This doctrine of Linnæus is considered at full in our "*Philosophy of Botany*," to which we refer the reader.

† The arguments of Morland are stated at length in our "*Philosophy of Botany*."

By degrees, about three or four o'clock, it is reabsorbed into the *style*, and entirely vanishes, until the following day, about ten o'clock, when it again begins to appear, and attains its full perfection about midday; and afterwards a second time, by a scarce perceptible decrease, it returns whence it originated.

Now each particle of *farina* possesses, enclosed by an elastic membrane, a fine *aura*, which escapes oftentimes with a vehement explosion, when this farina is made to fall on warm water, although so subtile in its nature, as nearly to escape detection by the naked eye.

Hence it is, if we agitate some of the *anthers* over the *stigma* of this AMARYLLIS, so that their contained *farina* shall meet this limpid drop, we shall soon see, as I have often experienced, the globules of the *farina* lose their determinate shape, assume irregular broken forms, and the *clear fluid* on the *stigma* become clouded and yellow, and even *opake streaks* may be observed running along the *style* towards the *embryo-seeds*. Immediately after this the whole liquid drop on the *stigma* entirely disappears.

Another evident example is furnished also by the MIRABILIS (*Marvel of Peru*), whose *farina* is so very coarse, that each globule nearly exceeds the dimensions of the *style* itself, along which therefore, only the subtle *aura*, or *pollen*, can pass, leaving behind the *reliquiæ* of the *farina*, or membranous covering, in broken fragments on the *stigma*, as in the former instance.*

When the plants are in flower the *farina* falls from the *anthers*, and is dispersed, just as seeds escape from their plants, the fruit being ripe.†

At the time of flowering, or what is the same, when the *farina* is shedding, the *stigma* appears on the *pistillum* most vivid, and moistened with dew, certainly at some part of the day. The *stamina* either surround this *stigma*, or, if the flowers nod, the *pistillum* curls upwards,‡ so that the *farina* may the more readily fall upon the *stigma*, upon which it is not only affixed by its *dew*, but in that moisture split, and made to discharge the fructifying *aura*, or *pollen*. This mixing with the lymph of the *stigma*, is then absorbed, and carried down to the *embryo-seeds*.

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* GREW had before explained this in the same way as LINNÆUS, "In discourse hereof with Sir Thomas Millington, I observed, that it was very credible that the powder, or farina, by falling upon the pistillum did communicate to the seeds a prolific virtue, that they did not enter in gross substance, but only some subtile and vivific *effluvia*, to which the visible powder is but *a vehicle*."

† Some of these have the remarkable property, like the seed-vessel of the *noli me tangere* (balsam), the wood sorrel, &c. to ejaculate their farina to a distance. The *kalmias* have their stamina enclosed in nitches of the corolla, and hence the filaments are curled like a bow, so that when the curve is at the utmost, the anthers are liberated from their cells, and the farina spirted over the pistillum.

The stamina of the *Parietaria* are also held in such a constrained curved position by the leaves of the calyx, that as soon as the latter become fully expanded, or are by any means removed, the stamina, being very elastic, fly up, and throw their pollen about with great force. I have lately, says Doctor Smith, observed a similar circumstance in the flowers of *Medicago falcata*. In this plant the organs of generation are held in a straight position by the carina of the flower, notwithstanding the strong tendency of the infant germen to assume its proper falcated form. At length when the germen becomes stronger, and the carina more open, it obtains its liberty by a sudden spring, in consequence of which the pollen is plentifully scattered about the stigma. The germen may at pleasure be set at liberty by nipping the flower so as gently to open the carina, and the same effect will be produced.

‡ This motion of the pistillum in every stage of the flower is beautifully illustrated in our Picturesque Botanical Plate of the LILIUM SUPERBUM (*Superb Lily*), one of the Martagore lilies. But in no example does it appear more evident than in the GLORIOSA SUPERBA (*Superb Lily*), where the *pistillum* bends at right angles in order to approach nearer the *anthers*. Also in the SPARTIUM SCOPARIUM (*Common Broom*) the *pistillum* bends itself spirally, like a French horn, in order to approach nearer to the *males*. Vide our Account and Plate of the MEADIA (*American Cowslip*).

LINNÆUS might have noticed here the contrivances of Nature, where the *pistilla* rise above the *stamina*. These may be beautifully observed in our superb plate of the PASSIFLORA CŒRULEA (*Common Passion-flower*), where the three upright stigmata curl downwards till they come into contact with the stamina. The same may be observed in the NIGELLA (*Devil in the Bush*), and the EPILOBIUM (*Rose-bay Willow-herb*), &c.

FIRST

FIRST EXPERIMENT.

*In the month of January of this year the ANTHOLYZA CUNONIA (*Scarlet-flowered Antholyza*) flowered in a pot placed in the window of my dining-room, but it produced me *no fruit*, because the confined air had not power to waft the *farina* to the *stigmas*.

Observing about midday *one of the stigmas* very *dewy*, I plucked off, by means of a fine pair of forceps, an *anther*, and gently brought it into contact with it. The spike remained eight or ten days longer adorned with flowers.

Then, indeed, cutting the stem in order to preserve it as a specimen in my herbarium, I observed a *fruit* in *that single flower*, over which I had placed the *anther*, which had swollen to the size of a bean.

SECOND EXPERIMENT.

The IXIA CHINENSIS (*Chinese Ixia*) flowered in the stove, the windows being shut, and all the flowers had *abortive fruit*.

I therefore took away the *anthers* from the flowers of another IXIA, and with these I sprinkled *two of the flowers*, and the following day only *one stigma* of a *third flower*.

The *germina* remained only in these *three flowers*, which swelled and bore *seed*; but, indeed, the *fruit* was in *one* of these three matured only in *one cell*.

THIRD EXPERIMENT.

The exterior *petals* of the ORNITHOGALUM (*Star of Bethlehem*) so closely connive, that although they admit air to the germen, they scarcely suffer the intrusion of the farina arising from another flower. This daily presented new flowers furnishing fruit, nor did fœcundation fail in any one instance. I therefore carefully, with a bent hook, removed the *anthers* from a *single flower*, and, as I had expected, it happened, that *this single flower proved abortive*.

After eight days I repeated the same experiment, and with a similar result.

FOURTH EXPERIMENT.

The NICOTIANA FRUTICOSA (*Shrubby Tobacco*) was growing in a garden-pot, and produced flowers and fruit most abundantly.

From a flower newly opening, I extracted the *anthers* which had not yet burst, and removed at the same time all the other flowers.

The *germen* here neither produced a fruit, nor swelled.

FIFTH AND SIXTH EXPERIMENTS.

The ASPHODELUS FISTULOSUS (*Onion-leaved Asphodel*) growing in an urn, I removed to one corner of the garden, and from one of the flowers which opened on that same day, I withdrew the *anthers*.

Hence that *germen* proved *abortive*.

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* This dissertation is divided into heads, or sections; and the first section relates to the Bisexual Flowers, or flowers where the two sexes are in the same corolla.

On another day I repeated the same experiment, and by using a flower furnished from another quarter of the garden, I sprinkled the *pistillum* of this with its *farina*.

Hence this *germen* proved *fruitful*.

SEVENTH AND EIGHTH EXPERIMENTS.

From a CHELIDONIUM CORNICULATUM (*Scarlet-horned Poppy*) growing in a remote quarter of the garden, I removed all the *anthers* in a flower which first appeared, and then carefully plucked away all the rest of the flowers.

On another day I made a similar experiment, but over the pistillum of this last I sprinkled the farina taken from another flower of the same species.

The result was, that the *first flower* produced *no seed*.

From the *second experiment* I obtained *perfect fruit*.

CONCLUSION FROM THESE EXPERIMENTS.

These EXPERIMENTS decisively prove that the *Anthers* are the *male organs* in plants, and perfectly disprove the opinion of some who have taught, that the *Stamina* are those parts of the fructification, which only separate excrementitious matter.*

PROOFS TAKEN FROM OBSERVATIONS.

FIRST OBSERVATION.

What might have convinced them on the contrary, is the universal appearance of the *Stamina* and *Pistilla* in all flowers, for none want these organs, although many flowers are devoid of *Calyx*, and many even have neither *Calyx* or *Corolla*, as the *Hippuris*.†

SECOND OBSERVATION.

All farmers know, that when rain falls upon the *rye in flowers*,‡ it washes off the *Farina* on the *Anthers*, and hence occasions many glumes in the spike to be empty of seeds.

THIRD OBSERVATION.

Even gardeners remark the same every year in their *fruit-bearing trees*. The flowers, by long exposure to rain, from this cause disappoint the expectation of fruit. §

FOURTH OBSERVATION.

Aquatic plants at the time of flowering rise above the water, for no other purpose than that the *Farina* may reach the *Stigma* unimpaired, for after impregnation they dip under water. ‖

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* This is levelled against the illustrious Tournefort, who held this doctrine, as did Alston.

† This is also an argument in favour of the Sexes of Plants used by RAY. "The flowers of plants may want their *ornamental parts*, as the *calyx* and *Petals*, but none are found to want the *apices*" (stamina), SYLLOGE STIRP EXTRA BRITAN.

‡ The anthers of *rye* hang out beyond the flower, and if rain falls while it is in flower, the dust is clotted, and hence the husbandmen do truly predict a bad crop; but the same holds not with barley, where the anthers lie close within the husk.

§ This especially applies to the *cherry*, whose anthers become mature all at once; but in the apple and pear the numerous anthers ripen at different periods. Hence gardeners are disappointed of fruitful seeds, who at this time make much use of the watering pot, unless they apply the water in a pan beneath, as many are in the habit of doing.

‖ Vide our account of the *Nymphæa Nelumbo*.

The

The NYMPHÆA ALBA (*White Water-Lily*) every day in the morning rises from the water and opens its flower, so that at midday it rises above the surface, by means of its peduncles, nearly three inches.

In the evening it is entirely closed, and shut up, when it sinks into its watery bed.

It is about four o'clock in the evening when it first contracts its flower, and it passes the whole night under water, which was observed two thousand years back, in the time of *Theophrastus*, who observed this in the NYMPHÆA LOTUS, a plant so resembling our NYMPHÆA, that it scarcely can be distinguished from it, unless in its foliage, which is toothed in the LOTUS.

Thus *Theophrastus* hath written in his History of Plants (Book 4. Chap. 10.) concerning the LOTUS.

" They report, that its head and flowers sink into the *Euphrates*, and descend even to the middle of the night, and sink to that depth, that even at daybreak it cannot be reached with the extended arm; then it returns, and emerges out of the waves, and opens its flowers more and more to the rising sun, advancing through the day, and the flower being completely expanded, it even then rises higher, so that at length it reaches to a considerable height above the water."

The same is nearly the custom of our WHITE NYMPHÆA.*

FIFTH OBSERVATION.

Many flowers are closed at night and before the coming on of rain; but the *farina* being shed, they remain afterwards always open.†

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* It is still open to doubt, whether this beautiful history of the NYMPHÆA LOTUS be not a fable. (Vide the Account of our Picturesque Botanical Plate of the NYMPHÆA NELUMBO). Might not the dipping of the flowers *after* impregnation; with their closing in the evening, being then covered by an unattractive calyx, *before* fecundation; give birth to the belief, that the *full-blown flowers* of the NYMPHÆAS do actually immerse, and rise again for several successive mornings? Still, however, it cannot fail to strike the observer, that the peduncles, or flower-stalks, hang at right angles to the root, and thus elevate themselves so as to reach different heights, so that the flowers shall be above the water, however swollen.

But the greatest prodigy in this way, is the *Vallisneria*, which grows plentifully in the rivers of Italy. The *female* plant, for the *sexes* are upon different plants, has a *spiral* stem, like a *screw*, which it contracts or unwinds, according to the depth of the currents it inhabits. The *male* has a short stalk, which snaps asunder, and the *male flowers* being liberated from the plant then expand, and swim on the surface of the water, and are conveyed in this way often to distant brides, with whom they celebrate their nuptials.

† Several plants, especially those with compound yellow flowers, nod, and during the whole day turn their flowers towards the sun; to wit, to the east in the morning, to the south at noon, and to the west toward evening; which is very observable in the *sonchus arvensis*, the sow-thistle. And I believe every body knows, that a great part of plants in a serene sky expand their flowers, and, as it were, with cheerful looks behold the light of the sun; but before rain they shut them up; *e. g.* the Tulip. The flowers of the *Draba Alpina*, Alpine whitlow grass, the *Parthenium foliis ovatis crenatis*, bastard fever-few with egg-shaped crenated leaves, and the *trientalis*, or winter-green, hang down in the night, as if the plants were asleep, lest rain or the moist air should injure the fertilizing dust. The trefoils, and one species of wood-sorrel, shut up or double their leaves before storms and tempests, but in a serene sky expand or unfold them, so that the husbandman can pretty clearly foretell tempests from them. And it is well known that the *Bauhinia*, or mountain ebony, sensitive plants, and *Cassia*, observe the same rule. The flowers of goats-beard open in the morning at the approach of the sun, and shut about noon; hence it is called John-go-to-bed-at-noon. *Parkinsonia*, tamarind tree, *Æschynomene*, or bastard sensitive plant, and several others of the *diadelphia* class, in serene weather, expand their leaves in the day-time, and contract them in the night. The tamarind tree is said, by Alpinus and Acosta, to enfold within its leaves the flowers or fruit every night, to guard them from cold or rain.

Hence the HOROLOGE, or *Botanical Watch*, is formed from numerous plants, of which the following are those most common in this country. LEONTODON TARAXACUM, *Dandelion*, opens at 5—6, closes at 8—9. HIERACIUM PILOSELLA, *Mouse-ear Hawkweed*, opens at 8, closes at 2. SONCHUS LÆVIS, *smooth Sow-thistle*, at 5 and at 11—12. LACTUCA SATIVA, *cultivated Lettice*, at 7 and 10. TRAGOPOGON LUTEUM, *yellow Goatsbeard*, at 3—5 and at 9—10. LAPSANA, *Nipplewort*, at 5—6 and at 10—1. NYMPHÆA ALBA, *white water Lily*, at 7 and 5. PAPAVER NUDICAULE, *naked Poppy*, at 5 and at 7. HEMEROCALLIS FULVA, *tawny Day-lily*, at 5 and at 7—8. CONVOLVULUS, at 5—6. MALVA, *Mallow*, at 9—10, and at 1. ARENAREA PURPUREA, *purple Sandwort*, at 9—10, and at 2—3.

SIXTH AND SEVENTH OBSERVATIONS.

In what manner the PARNASSIA and SAXIFRAGE approach their *Anthers* to the *Stigmas* is well known.*

EIGHTH OBSERVATION.

The RUTA GRAVEOLENS (*Common Rue*), a very familiar plant, moves one of its *Anthers* every day over its short *Pistillum*, until each of them, in order, has deposited its *Farina*.†

NINTH OBSERVATION.

The ORNITHOGALUM NUTANS (*Neapolitan Star-flower*) has six broad *Stamina* conniving in the form of a bell, of which the three exterior are shorter than the others by one half, so that it would appear that the *Anthers* of these could never pass their *Farina* over the *Stigma*, but Nature, with admirable wisdom, has turned the anthers inwards towards the bell, the shorter ones becoming first mature, so that they do actually accomplish their office.‡

II. A day would sooner fail me than examples,§ but I pass these by, and hasten to the consideration of the *unisexual flowers*.

FIRST EXPERIMENT.

Several species of MOMORDICA (*Cucumbers*) which are cultivated with us, like other *Indian vegetables*, in close stoves, have there very frequently produced *female flowers*, and these, although at first very flourishing, in a short time have begun to wither, nor have they produced seed, until I instructed the gardener, as soon as he should discover a *female flower*, to pluck a *male*, and place it over the *female flower*. By this art, for a certainty, we have produced fruit,

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ANAGALLIS, *Pimpernel*, at 7—8. PORTULACA HORTENSIS, *garden Purslain*, at 9—10, and at 11—12. DIANTHUS PROLIFER, *proliferous Pink*, at 8, and at 1. CICHOREUM, *Succory*, at 4—5. HYPOCHÆRIS, at 6—7, and at 4—5. CREPIS, at 4—5, and at 10—11. PICRIS, at 4—5, and at 12. *Field Calendula*, at 9, and at 3. *African Calendula*, at 7, and at 3—4.

So in almost all sorts of flowers we see how they expand or open by the heat of the sun, but in the evening, and in a moist state of the air, they close or contract their flowers, lest the moisture getting to the dust of the *antheræ* should coagulate the same, and render it incapable of being blown on the *stigmata:* but (which is indeed wonderful!) when once the fecundation is over, the flowers neither contract in the day, in the evening, nor yet against rain.

* It is a pleasing sight to see the *stamina* in many flowers advance over the pistillum. In the PARNASSIA, and SAXIFRAGE, the stamina regularly rise, but after impregnation the *stamina* fall back in a circle. I have often witnessed this in the several SEMPERVIVUMS (*houseleeks*), where the six more mature *stamina* advance to the central females, then they retreat, and the remaining six next advance, as regular as with a troop of horse, and then the whole twelve fall back in a circle.

† I examined, says the illustrious Dr. Smith, the RUTA CHALEPENSIS (*African Rue*), which differs very little from the common Rue, and found many of the stamina in the position which Linnæus describes, holding their antheræ over the stigma; while those which had not yet come to the stigma were lying back upon the petals, as well as those which, having already performed their office, had returned to their original situation. Trying with a quill to stimulate the stamina, I found them all quite devoid of irritability. They are stout, strong, conical bodies, and cannot, without breaking, be forced out of the position in which they happen to be. The same phænomenon has been observed in several other flowers; but it is no where more striking, or more easily examined, than in the Rue. Vide *Tracts on Natural History*, p. 174.

‡ Where there are several *stamina* in a flower, these are often of a disproportionate size, and then the lower tier become first mature, and embrace the young pistillum, which increasing in growth, in a few days after celebrates her amours with the taller beaux. Thus the LYCHNIS FLOS CUCULI (*Meadow Lychnis*) has ten *stamina*, of disproportionate sizes, five of which arrive at their maturity before the other five. The same may be seen in our common *Blue Bell* (HYACINTHUS). The *position* of the *anthers* on their *filaments* as respects the pistillum, is worthy also of observation. Vide our Picturesque Plate of the RHODODENDRON PONTICUM (*Pontic Rhododendron*) which illustrates both these observations.

§ The reader will find a great many other examples among our *Select Plants*.

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and such is our present confidence, that we could pledge ourselves to make *any female flower* fixed upon, *fertile*.*

SECOND EXPERIMENT.

In the month of April I sowed HEMP-SEED (*Canabis*) in *two* pots.

The young plants came up in such abundance, that each pot contained thirty, or forty, plants.

I placed *both* to the light on a window-seat, but in opposite parts of the house, so that all communication was necessarily prevented.

In both situations the HEMP flourished greatly.

In *one* of the pots I suffered the *male* and *female* plants to grow together, to flourish, and produce fruit, which was ripe in the month of June, and afterwards being macerated in water, and committed to the earth, shot up within twelve days.

But in the *second* I plucked up all the *male plants* as soon as they had advanced, so that I could discern the *anther-bearing males* from the *pistil-bearing females*.

The surviving *females* indeed flourished, and copiously presented their long pistils, but the flowers remained a very long time, as if all that length of time in expectation of marriage; so that in the mean time in the *other pot* the fruit had reached maturity, and the *pistils*, in a quite different way, had instantly faded, after the *males* had discharged their *farina*.

Undoubtedly this is a pleasing sight, and very much to be admired, that the *unmarried* females in so opposite a way retained their *pistilla* green and flourishing, nor first allowed these

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* The *Cucumber* affords a familiar example of the *Sexes of Plants*, for it produces on the same trailing branches flowers *male* and *female*; that is, some of the flowers have only *stamina* (no pistillum), and others again only the *pistilla*, without the *stamens*, and being cultivated under glass for early produce, it is a known fact, that gardeners are obliged to pluck the *males*, or *stameniferous* flowers, and place them in the corollas of the *females*, or *pistilliferous* flowers. This process is thus celebrated by the illustrious COWPER in his poem called "The Garden."

> *Plants* have their *sexes*, and when *Summer* shines
> The BEE transports the *fertilizing meal*
> From flower to flower, and e'en the *breathing air*
> Wafts the rich prize to its appointed use.
> Not so when *Winter* scowls. *Assistant art*
> *Then acts in Nature's office, brings to pass*
> *The glad espousals, and ensures the crop.*

It is curious to observe, that all *stamenifervus*, or *male* flowers, produce *honey*.

One of the most singular ways of the fecundation of plants through insects, we have in the ARISTOLOCHIA CLEMATITIS (*Common Birthwort*). It has a linguiform corolla, which at its inferior part is spherical, towards the top it becomes long and tubular, and its margins end in a flat and spearpointed extremity. The *pistil* is placed in the round cavity of the corol, the *germen* of which is surrounded by *six anthers*, which are *shorter* than the germen itself. The germen has no style, but is provided with an hexagonal stigma, which is very shallow, and on its upper surface has imbibing pores. *The anthers cannot empty the pollen upon the stigma, as the flower stands always straight upright during the period of flowering.* The *pollen* therefore must necessarily fall to the bottom of the flower without being used, if *no insects* come near the flower. And indeed if it be tried, and all insects kept from the flower by a thin, but firmly closed piece of gauze, no seeds will be formed. It happens indeed not unfrequently, that as it is a particular insect which impregnates the flowers, when it is wanting or not able to find the flower, this last withers without having a single seed. This insect is the TIPULA PENNICORNIS. The round bottom of the flower is, in its interior, quite smooth, but the tubular extremity is lined with dense hair, every one of which is turned towards the interior, so as to form a kind of funnel, through which the insect may very easily enter; but cannot without great difficulty return, and is obliged to remain in the cavity. Uneasy to be confined in so small a space, it creeps constantly to and fro, and so deposits the pollen on the stigma. After this is done, the flower sinks, the hair, which obstructed the passage, shrinks and adheres closely to the sides of the flower; by which means the insect gets free. Who but must admire the wise provision of Nature in fecundating this seemingly trifling flower!

to collapse, before that they had been a very long while exposed for the access of the *male farina.**

And, lastly, when these *virgin* plants began to be affected with age, I diligently searched along with several botanists for all the calyxes, and I found these large and flourishing, but the *seeds*, as many as were found, were yellow, compressed, membranaceous, dry, not exhibiting the slightest trace of cotyledons or pulp.†

THIRD EXPERIMENT.

The CLUTIA PULCHELLA (*Broad-leaved Clutia*) was also, during the months of June and July, kept in the same window of my room.

The *male* and *female* plants were in different pots.

The *female* in consequence abounded in fruit, and indeed, not a single flower dropt abortive.

Then I separated the pots to different windows in the same room, nevertheless, all the female flowers produced perfect fruit.

I lately removed the *male* altogether, and only left the *female plant*, having first removed all the former, and newly expanded, flowers.

From the axilla of each leaf there daily appeared fresh ones, which remained for the space of eight or twelve days, but afterwards the peduncles turning yellow, they fell off empty of fruit.

A friend, a botanist, who was delighted with this experiment with myself, one day persuaded me, that I should bring a *single male flower* from the stove in the garden, which he

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* Linnæus elsewhere observes, "The act of flowering seems greatly to exhaust the living principle. In the moth and butterfly it may be observed, how after marriage the wings droop, and life expires. But if this butterfly be confined like a nun in a convent, it will survive many months. So annual plants will become biennial; if they do not happen to blow the first year, they will resist the cold of winter, as the pinks, lychnises, &c. even to the third winter, but once having blown, they soon after perish.

The MUSA (*Plantain*) often lives to an hundred years: but having once opened its flowers, no art or experience teaches how to save this superb plant from perishing that same year.

The CORYPHA (*Fan Palm*) was sterile for thirty-five years, and grew to the height of seventy feet, and in four months it rose to thirty feet in height, and produced fruit that same year, which being accomplished, the whole plant died. Hort. Cliff. 482.

The LAVATERA ARBOREA (*Tree Lavatera*) rises to the height of a pear-tree, supporting readily the colds of winter, but having once put forth any blossom, neither the friendly hand of the gardener, nor stoves, nor attention, can save it from perishing in the coming winter. Lin. Amæn. Acad. Tom. i. 375.

The same remark holds good as respects the AGAVE AMERICANA (*American Aloe*); vide the description accompanying our Picturesque Botanical Plate of that superb plant.

Hence it is that all double flowers last so much longer than single, and that *tulips* deprived of their *anthers* retain for a great while their corolla-leaves.

† This experiment of the *Hemp* has been repeated by SPALANZANI, and a contrary conclusion drawn; but the plants grew in places where *cordage* was made, and where *Hemp* was cultivated in the neighbourhood--but in *sequestered spots* in the country, where I have prosecuted these experiments, the results have been exactly as recorded by Linnæus. Vide our "*Philosophy of Botany*," where the experiments of Spalanzani, and the confutation of them, will be recorded at considerable length. Care, however, must be taken, that on the *female Hemp* no *males* are found interspersed amongst the *female flowers*, a common *Lusus Naturæ*; and even it has been experienced, that a *female plant* has in course of time produced only *male flowers*, and *vice versâ*. JOHN BAUHINE (Hist. Plant. tom. i. p. 351.) describes the whole fructification of a *Palm*, which he saw growing at Montpelier, and which not only produced branches of *male* flowers, but also *female* ones bearing dates. RAY tells us in his History of Plants, (vol. ii. p. 1354.) that he himself saw, many years after, this same remarkable tree mentioned by Bauhine. This variety in the fructification has been noticed by several other authors. The learned JUNGIUS, in his Doxoscopia (Chap. iv. p. 145.), mentioning that class of trees which are male and female in different parts of the same tree, says, "That such kind of trees, when they have for many years produced flowers without fruit, afterwards sometimes will produce fruit without flowers. This," he thinks, "should be farther enquired into." This, since Jungius's time, has been done, and it has been found, that sometimes the trees of this class are wholly *male*, while young; but as they advance in age, they have flowers of *both sexes*, and afterwards become entirely *female*. This fact MILLER has frequently himself observed in the *Mulberry-tree*; and the Chevalier RATHBEG, a gentleman excellently versed in whatever relates to botany, has observed, that a large LENTISCUS (*Mastich Tree*) in his garden, for *thirty years* had produced only *male flowers*, but that for *three years* past, it had also produced plenty of fruit.

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placed in contact with a *female* flower recently open, and tied this flower with a piece of red silk to know it again.

The next day I removed the male flower, and this *one germen* indeed remained, and produced fruit.

After the experiment, I took *another male flower* from the stove, and by means of a slender forceps, I removed from it one of its *Anthers*, and having scratched it gently with the knib of a pen, I took care that a little of its *farina* might fall upon one of the *Stigma*, having guarded the remaining two *stigmata* by a cap made by an hollow roll of paper.

This *Germen* also grew to a fruit of the ordinary size, and afterwards being transversely dissected, it *alone* produced a large seed in one of the three cells, the *other two* being empty.

The other flowers, not having suffered impregnation, every one of them, becoming withered, dropt.

The repetition of this experiment is also as readily to be repeated as the former.

FOURTH AND FIFTH EXPERIMENTS.

The JATROPHA URENS (*Stinging Jatropha*) flowers every year in my hot-house, but the *female flowers* have preceded the *males*, and before eight days they lost their petals, and faded, before the *male flowers* were expanded.

Hence not only they produced *no fruit*, but the *flowers* themselves *dropt*.

Thus it happened that, until the year 1752, we could obtain *no fruit* of the JATROPHA.

But in this year, the *male flowers* were in vigour upon a taller tree, at the precise time the *females* appeared on a small JATROPHA growing in a pot.

This pot I placed under the tree producing *male flowers*, and in this manner I accomplished, that the *female flowers* produced *seed*, which, being sown in the earth, grew.

Two years after I placed these *male flowers* under a piece of paper, until the *Farina* had fallen upon it, which I preserved rolled up, if I recollect right, for four or five weeks, when this same JATROPHA on another branch produced *female flowers*.

Then I sprinkled that *Farina* so long preserved in paper upon *three flowers*, the only ones at that time expanded.

These *three* female flowers *only* became *fruitful*, whereas *all the other flowers* which appeared in the same corymbus fell off *abortive*.*

I have frequently since amused myself by taking the *male Farina* from one plant, which by sprinkling upon the *females* of another, I have always found the seeds thereby rendered fruitful.†

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* The same experiment was made on the JATROPHA IMPERIALIS (*Imperial Jatropha*), and with exactly the same result. The *male* flowers usually occupy the upper part of the plant, and are soon to be distinguished from the *females*.

† A similar experiment was made on the BEGONIA NITIDA (*oblique-leaved Begonia*), which forms one of our Picturesque Botanical coloured plates, where the *male* and *female* flowers are very readily distinguished from each other, even at their first appearance, the *males* having a corolla consisting of four petals, the *females* of five, which gave the same confirmation of the Sexual Hypothesis.

SIXTH EXPERIMENT.

The DATISCA CANNABINA (*Smooth-stalked Bastard Hemp*) was raised from seed about ten years ago in my garden.

It abounded in flowers, but these being *females*, therefore proved abortive.

In order to obtain a *male plant* I procured some seeds from Paris.

These also grew well, but what vexed me was, they all proved *females*, and, therefore, produced me also flowers without fruit.

At length, in the year 1757, I procured other seeds.

Out of these some plants were *males*, and in the year 1758 flowered.

These I removed into a border very remote from the *females*.

Therefore, when the *male flowers* were mature for shedding their *Farina*, I held a *paper under them, and gently agitated the loose spike of flowers with my finger, until the whole surface was nearly covered with yellow *Farina*.

I carried this to the *female flowers*, which were produced in another part of the garden, and sprinkled it over them.

The result was, these *female flowers* alone ripened their fruits where I had dispersed the *Farina*, and their seeds attained their due magnitude; but in all the rest, being fertilized by no *Farina*, there appeared not a vestige of any seeds.†

SEVENTH EXPERIMENT.

The PHŒNIX DACTYLIFERA (*Date-bearing Palm*) a long time flowered at *Berlin*, but produced no fruit.

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* KOELREUTER, a famous experimental botanist, sent, from *Karlsruhe* to GLEDITSH, the *farina* of the *male* CHAMÆROPS HUMILIS by post, with which, by means of a camel's-hair brush, he impregnated a *female plant* in his garden, and, for the first time, obtained ripe seeds, from which he raised young plants.

† Sometimes, however, under such circumstances, the seeds arrive at their due magnitude, but, as was long since observed, are barren.

"Mr. Jacob Bobart, overseer of the Physic Garden at Oxford, about thirty-eight years ago, which was before the doctrine of the different sexes of plants was well understood, herborising in the country, observed a plant of the *Lychnis Sylvestris simplex*, whose flowers, though they had stamina, yet there were no apices; and finding this not in one, but in all the flowers upon the same plant, this made him imagine it might be a new species, and therefore he marked the plant, and took care to have it preserved till the seeds were ripe; and he at length procured them full hard and firm, and to outward appearance *Remplis des germe* (as Mr. Geoffroy has it). He failed not to sow them in his garden next season in a proper place, but there was never a plant which sprung up.

I had this account from the celebrated Dr. Sherard, at whose desire I have inserted it, and both of them being persons of such esteem, and so good credit, I may venture to say it sets the opinion of the different sexes of plants upon another footing than it is received by most of our modern authors; for this imports that it is not the nourishment of the gross substance of the seed itself, which is hereby meant, nor the increase of the seed-vessel, which is thereby designed, for, as is observed, a hen can lay an egg without previous congress with the cock, and this shall be the same for colour, taste, (when new-laid) smell, bigness, with another egg which has the tread (as they call it), i. e. that has been fecundated by the *Materies Seminalis Masculina*; but the difference appears when both are put under the hen to be hatched, the one shall pullulate or chit, and the other shall become fetid and rot.

The LYCHNIS DIOICA (*Wild Red Lychnis*) being made by me the subject of experiment, gave additional confirmation of the Sexes of Plants." Vide Blair on the Generation of Plants, in his Botanical Essays.

The learned Dr. Hope, late professor of botany in the university of Edinburgh, a strenuous advocate for the sexes of plants, made the following experiment. He found of this Lychnis dioica two kinds, the white and the red; and he was convinced (as are since this time Professor Martyn and Mr. Curtis) that these are not varieties, but distinct species, and that the white never produces naturally red flowers. He placed under the same bell the red and the white Lychnis Dioica, the one a *male* and the other a *female* plant, and the bell terminated in a tube for the admission of air, but filled with moss, to hinder the access of any other farina; and from this *white* female Lychnis he obtained seeds, which produced him some *red* Lychnises. Vide Note * in the description of the Carnation to our Picturesque Plate, where the doctrine of the Sexes of Plants is further confirmed by observations on that flower.

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Some of the *male flowers,* from a tree flourishing at *Leipsic,* were sent by the post, and in this way fruit was obtained, and some of these I planted in my own garden, and they germinated, and at this present time are in a very flourishing state.*

KÆMPHER has long since reported, how necessary it was found by the nations in the East, who live by the fruit of the PALM-TREE, and are the true *Lotophagi,* to plant a few *male plants* amongst the female trees, if they expected any harvest; hence, upon an invasion, they were led to cut down the *males,* that the enemy might feel a want of provisions, and sometimes this destruction was made as a vengeance upon a resisting country.†

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* This curious account of the date-bearing Palm is to be met with in the Philosophical Transactions, vol. xlvii. p. 169, including a letter which was read to that society May 2, 1751, with some ingenious observations on that subject by one of the members of that learned society, Doctor Watson, to whom it was addressed.

Professor MYLIUS's letter to Dr. WATSON, dated at Berlin, Feb. 20, 1750—51. "The Sex of Plants is very well confirmed, by an experiment that has been made here on the *Palma major foliis flabelliformibus.* There is a great tree of this kind in the garden of the Royal Academy. It has flowered and bore fruit these thirty years, but the fruit never ripened, and, when planted, it did not vegetate. The palm-tree, as you know, is a *Planta Diœcia,* that is, one of those in which the male and female parts of generation are upon different plants. We having therefore no male plants, the flowers of our female were never impregnated with the farina of the male. There is a male plant of this kind in the garden at Leipsic, twenty German miles from Berlin. We procured from thence, in April 1749, a branch of male flowers, and suspended it over our female ones; and our experiment succeeded so well, that our palm-tree produced more than an hundred perfectly ripe fruit; from which we have already eleven young palm-trees. This experiment was repeated last year, and our palm-tree bore above two thousand ripe fruit. As I do not remember a like experiment, I thought it convenient to mention it to you; and, if you think proper, be pleased to communicate it to the Royal Society."

† As Linnæus aimed at brevity in this dissertation, we have here, as concisely as possible, commented upon his text, hoping that our readers will not feel fatigued by our enlarging a little upon so very curious a topic by renewing again the subject of the Palm.

"The *palm-tree* grows very high forming one stem.—A sort of bough shoots out and bears the fruit in a kind of sheath, which opens as it grows. The *male* bears a large bunch something like millet, which is full of a white flower, and unless the young fruit of the *female* is impregnated with it, the fruit is good for nought; and to secure it they tie a piece of this fruit of the male to every bearing branch of the female. Strabo observes that the *palm-tree* in Judea *did not bear fruit,* as at present; which probably may be owing to their not having the *male tree*; concerning which I could get no information. But the fruit of the *female tree,* without the male, drops off, or comes to no perfection." Vide Pocock's Description of the Eaft, vol. i. 206.

"On the morning of the 21ft, I had the pleasure of seeing from my window one of the most remarkable sights in nature. A *female* palm (Phœnix dactylifera Linnæi) had in the night put forth its blossoms from the spatha; I went thither at sun-rise to see it, whilst the dew was yet falling. I saw a gardener, the proprietor of the palm, climbing up the palm, which equalled our largest firs in height. He had a bunch of *male flowers* with which he powdered the female, and by these means fecundated them." Vide Hasselquist's Voyages and Travels in the Levant, English Transl. p. 112.

"The first thing I did after my arrival in Egypt, was to see the *Date-tree,* the ornament and a great part of the riches of this country. It had already blossomed, but I had, nevertheless, the pleasure of seeing how the *Arabs* assist its fecundation, and by that means secure to themselves a plentiful harvest of a vegetable, which was so important to them, and known to them, many centuries before any botanist dreamed of the different sexes in vegetables. The gardener informed me of this before I had time to inquire, and would shew me, as a very curious thing, the *male* and *female* of the *Date* or *Palm-tree*; nor could he conceive how I, a Frank, lately arrived, could know it before; for, says he, all who have yet come from Europe to see this country, have regarded this relation either as a *fable* or a *miracle.* The Arab, seeing me inclined to be further informed, accompanied me and my French interpreter to a *Palm-tree,* which was very full of young fruit, and had by him been wedded or fecundated with the *male,* when both were in blossom. This the Arabs do in the following manner: when the *spadix* has a *female flower* that comes out of its *spatha,* they search on a tree that has *male flowers,* which they know by experience for a *spadix* which has not yet burst out of its *spatha:* this they open, take out the *spadix,* and cut it lengthways in several pieces, but take care not to hurt the flowers. A piece of this *spadix,* with *male flowers,* they put lengthways between the small branches of the *spadix* which hath *female flowers,* and then lay a leaf of a Palm over the branches. In this situation I yet saw the greatest part of the *spadices* which bore their young fruit; but the *male flowers* which were put between were withered. The Arab besides gave me the following anecdotes: FIRST, unless they, in this manner, *wed and fecundate the Date-tree, it bears no fruit.* SECONDLY, they always take the precaution to preserve some unopened *spathæ* with *male flowers,* from one year to another, to be applied for this purpose, in case the *male flowers* should miscarry or suffer damage. THIRDLY, if they permit the *spadix* of the *male flowers* to burst or come out, it becomes useless for fecundation: it must have its *male dust,* (these were the words of the Arab), which is lost in the same moment the blossoms burst out of their case. Therefore the person, who cultivates Date-trees, must be careful to hit the right time of assisting their fecundation, which is almost the only article in their cultivation. FOURTHLY, on opening the *spatha,* he finds all the *male flowers* full of a liquid, which resembles the finest dew; it is of a sweet and pleasant taste, resembling much the taste of fresh dates; but much more refined and aromatic: this was likewise confirmed by my interpreter, who hath lived thirty-two years in Egypt, and therefore had opportunities enough of tasting both the nectar of the blossoms, and the fresh dates.

"Thus much have I learned of this wonderful work of Nature, in a country where it may be seen every year. I shall have the honour to give a relation of the use, and divers other qualities of the Date-tree, at some other opportunity." Vide Hasselquist's Letters to Linnæus.

"In one of our excursions we had an opportunity of observing a curious process in the vegetable world. It has already been observed by naturalists, but is too uncommon to be known to readers of every class. The *Date-trees* were now in blossom; and we remarked the Arabs to be busied about the branches. It is necessary to ingraft all fruit-trees to obtain good fruit; but the propagation of the Date is in another

manner,

EIGHTH EXPERIMENT.

The experiments on the MAIZE related by LOGAN are perfectly conclusive.*

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manner, and intimately resembles that of the animal creation. There is a *male* as well as a *female* Date-tree, which are distinguished from each other by the colour and shape of the blossoms. The *male-tree* yields no fruit; but the gardener must be careful, every spring, to cull as many blossoms from the *male* as will serve his purpose. One of these at least he must inwrap and bind up in the blossom of the *female-tree*; without which she will prove as barren as the *male*." Vide Irwin's Series of Adventures in the Course of a Voyage up the Red Sea. 8vo. Edit. 1787.

SONNINI, the latest traveller in Egypt, gives us the following account of the uses of the Date-tree.

" Among the trees of Egypt there is none more widely dispersed than the *Date-tree*: it is every where to be found, in the Thebaïs and in the Delta; in the sands as well as in the cultivated districts. Although it requires little culture, it yields a considerable profit, on account of the immense consumption of its fruit. The date varies in quality; that which is produced in the environs of Rosetta is delicious, and boats are laden with it for the market of Cairo.

" To climb trees which have no branches but at their top, and the straight and slender stem of which cannot support a ladder, the Egyptians employ a sort of girth fastened to a rope, that they pass round the tree. On this girth they seat themselves, and rest their weight; then, with the assistance of their feet, and holding the cord in both hands, they contrive to force the noose suddenly upwards, so as to catch the rugged protuberances with which the stem is symmetrically studded, and formed at the origin of the branch-like leaves, that are annually cut. By means of these successive springs, the people of this country reach the top of the *Date-tree*, where, sitting, they work at their ease, either impregnating the females, or gathering the clusters of fruit: they afterwards descend in the same manner.

" The *dates* are not the only produce of this species of Palm-tree; from hard beating its bark, its branch-like leaves, as well as the rind of its clusters of fruit, threads are obtained, from which are manufactured ropes and sails for boats. The leaves serve likewise for making baskets and other articles. The very long rib of the branches, or leaves, is called in Arabic *dsjerid*. From its combined lightness and solidity, it is employed by the Mamalûks, in their military exercises, as javelins, which they throw at each other from their horses when at full speed." Vide Sonnini's Travels into Egypt, 4to. Ed. 1800. p. 400.

* His book is entitled, " Experiments and Reflections on the Generation of Plants, by JAMES LOGAN, President of the Council, and Chief Justice of the Province of Pensilvania," and was published in 1739. From this Essay I shall extract what the ingenious author has related respecting the Maize, or Indian Corn.

" As several doubts had formerly occurred to me in respect to the generation both of plants and animals, when I first heard of the *Farina fœcundans*, or impregnating male dust, I conceived great hopes that these would be easily solved, and the whole of this intricate affair receive considerable light from the discovery. And as I had long ago observed, with surprise, the singular way of growth of our Indian Wheat or Maize, I judged it, of all the plants I had seen, or perhaps of any that Nature produces, the most proper one for experiments of this kind.

Indian Wheat grows to the height of six, eight, and sometimes ten feet. At the top of the stalk it bears a thready tuft or tassel (called by MALPIGHI, *Muscarium*) furnished with *apices*, which yield the *farina*. From the joints of the stalk below, the ears grow out, which are six, eight, ten, and sometimes even twelve inches long. These consist of a pretty solid substance, about an inch thick, set quite round with grains regularly disposed in rows, in a very beautiful manner. Generally there are eight such rows, often ten, sometimes twelve; and I once saw sixteen: there are commonly forty grains in each row, more or less; which, in their first rudiments, and whilst the stalk they grow upon is soft and tender, may justly be called the *ova* or eggs: to each *ovum* there adheres a white, fine, smooth filament, which, excepting that it is hollow, resembles a thread of silk. These filaments are disposed one by one in order, betwixt the rows from that end where the ear rises from the stalk to the other, where they creep from under the case that incloses the ear, and make their appearance, in the open air, in a bundle or skein: their colour in this part is mostly whitish, though sometimes a little yellow, red, or purple, according to the nature of the plant they grow from: these filaments, as I formerly suspected, are the real styles of the eggs.

Intending therefore to make some experiments on this plant, towards the end of April I planted four or five grains on hillocks, as is usual in sowing maize, in each corner of a little garden I had in town, which was about forty feet wide, and eighty long. About the beginning of August, when the plants were full grown, and the tufts on the top, and the ears on the stem, had acquired their full extent, I cut off these tufts from every plant on one hillock. On another, without meddling with the tufts, I gently opened the leaves that covered the ears, and cut away from some all the styles, and then closed the leaves again; from others a quarter part, from others one half, and from others three quarters, and left the rest untouched. I covered another ear, before the skein of styles appeared out of the case, with a piece of very fine and soft muslin, but so loosely, that its growth could not be injured; and whilst the furzy texture of the muslin suffered it to receive all the benefit of the sun, air, and showers, the *farina* was effectually secluded. I left the plants on the fourth hillock, as I did these, except in the circumstances above-mentioned, unmolested, till they were fully ripe.

After the beginning of October, when it was time to inquire into the success of my experiments, I made the following observations. In the first hillock, where I had cut off all the tufts, the ears, whilst they remained covered with their husks, looked indeed very well, but were small, and felt light when handled; and not one perfect grain to be found in them, except in one large ear, which grew out somewhat farther from the stalk than usual, and on that side too which faced another hillock in a quarter from whence our strongest winds most commonly blow: in this ear alone I found about twenty grains which were full grown and ripe. I attributed this to some *farina* brought by the wind from a distant plant. In those ears from which I had plucked off some of the styles, I found just so many ripe grains as I had left styles untouched. In those covered with muslin, not one ripe grain was to be seen: the empty or barren eggs were nothing but mere dry husks.

From these experiments, which I made with the utmost care and circumspection, as well as from those made by a great many other persons, it is very plain that this *farina*, emitted from the summits of the stamina, is the true male seed, and absolutely necessary to render the grain fertile. A truth which, however certain, yet was unknown till the present age: the discoverer of this grand secret of Nature, therefore, ought ever to be remembered with due applause. Sir Thomas MILLINGTON, sometime Savilian Professor, seems first to have taken notice

of

To relate more examples would fatigue the reader unnecessarily.*

All Nature proclaims the truth of this doctrine, and every flower of every sort† might be adduced as a witness in its favour. The day would sooner fail me than matter.

III. Leaving innumerable other proofs behind, from both *bisexual* and *unisexual flowers*, I hasten to the consideration of *hybrid*, or *mule plants*, a subject indeed meriting every attention.

Some have ascribed every thing to the *female*, after HARVEY.

Others again to the *male*, after LEWENHOCK.

As for myself, I ascribe the offspring to *both*, which the production of *mules* does confirm.

To instance this, there are *two different kinds* of *mules*.

From the *mare* and *male ass* proceeds the most useful *mule*, which in its gentle nature resembles its mother; but in its mane and tail, and cross on its back, the ass. This animal, which fetches an high price in Spain, is called HINNUS.‡

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of it, before or about the year 1676, according to the account which Dr. GREW gave, in a lecture read before the Royal Society the 9th of November the same year. (See GREW's Works, p. 161, 171.) MALPIGHI no where, that I know of, mentions its use. And GREW himself, though he allows it necessary for fecundation, yet did not suspect that it entered the *germen*: but M. MORLAND, about twenty years after, asserted that it entered the *germen* through the canal of the style. (See Phil. Trans. No. 287.) I once only saw a small grain in the middle of this canal; nor is it to be doubted, but that stricter inquiries will discover more of them passing the same way."

This doctrine by Morland has been refuted by Linnæus, from his observations on the Amaryllis and Marvel of Peru, before recorded. Such as may be curious to see the reasonings upon which Morland founded this opinion, will please to consult our " Philosophy of Botany."

* The reader will call to mind, that the author of the prize dissertation was required to produce chiefly new facts. The Question was Pro Præmio proposita " Sexum Plantarum argumentis et experimentis novis, præter adhuc jam cognita, vel corroborare, vel impugnare, præmissa expositione historica et physica omnium Plantæ partium, quæ aliquid ad fecundationem et perfectionem seminis et perfectionem seminis et fructus confeme creduntur." So that the beautiful proofs of the Sexes of Plants, which were before known, he could not properly introduce into this dissertation, which will form an apology for the number and length of some of our Notes. The subject is considered more at large in our " Philosophy of Botany."

† It has always been an interesting subject of enquiry, to all philosophical admirers of the Sexual System, whether the numerous and intricate tribes of plants, which, on account of the obscurity of their fructifications, were all put together by Linnæus into the class called *Cryptogamia*, were really endowed with flowers and seeds, like other vegetables, or totally destitute of both. Much has been written on the subject of Mosses. Many botanists denied their having any flowers, or sexual organs, as TOURNEFORT, ADANSON, and NECKER. The last-mentioned author writes in a very singular and decisive style concerning them. " Whatever," says he, " has been, or can in future be said of the sexes and copulation of Mosses, we are determined to consider as a fiction and a dream." LINNÆUS and DILLENIUS, more philosophical than this writer, judged from observation and analogy, that Mosses were neither destitute of flowers or seed; they even thought they had discovered both, but proved to be mistaken. MICHELI was the first who observed the real stamina and pistilla in Mosses, but his observations were neglected, and scarcely credited by subsequent authors, till the truly ingenious and accurate Dr. HEDWIG, of Leipsic, published his History of Mosses in 1782, in which he demonstrates the parts of fructification of a large number of Mosses, in so satisfactory a manner, and illustrates the structure and economy of these minute plants so completely, that there cannot be a doubt remaining on the subject. He proves that the *capsula* of DILLENIUS, (the *anthera* of LINNÆUS) which both those authors considered as producing the impregnating pollen, is in fact the fruit, and the powder which it contains, the seed; and that the male flowers are what LINNÆUS and others took for the female. The celebrated SCHREBER had before suspected this to be the case. See his Dissertation on the *Phascum*.

" This opinion is now adopted by all scientific botanists; and it has been anxiously wished that Dr. HEDWIG would prosecute his enquiries through the other orders of the Cryptogamia. This he has been employed in doing; and we are happy to communicate, upon the best authority, some account of his discoveries, published in a prize dissertation at Petersburgh, which has not yet reached this kingdom. In this work Dr. HEDWIG illustrates the fructification of *Filices*, *Algæ*, *Musci*, and *Fungi*, in thirty-seven plates. The *Equisetum* is referred by him to the class *Tetrandria Monogynia*. The *antheræ*, or male organs of the Agaric, he found on the inside of the *volva*, which covers the *lamellæ* while the fungus is young, and afterwards generally becomes an *annulus* round the stem. The *pistilla* are situated in the *lamellæ*. The *scutellæ* of the Lichens, he is persuaded, are capsules of the seed, and that the *tubercula* of the *Lichenes tuberculati* have been first *scutellæ*; in which opinion every one who has studied this genus of plants will probably agree with him. The *cilia* of *Lichex ciliaris* he believes to be roots; probably those of many other species which resemble it are so likewise. His favourite axiom is " *Omnis planta ex semine*," as that of HARVEY was ' *Omne animal ex ovo.*' " Dr. SMITH.

‡ In the Rev. Mr. TOWNSEND's " Journey through Spain," a work replete with useful science and agreeable remarks, and in every part perfectly to be depended upon, speaking of these mules, he entertains us with the following observations.

" I prolonged my stay at the *Escurial*, chiefly for the purpose of being present at the *Batida*, or royal hunt, of which there are four every year. This was ordered for the 28th of November, previous to the departure of the court.

" On the day appointed, Mr. Liston had the goodness to place me with the Neapolitan ambassador, who, as representing one of the family, gave a sumptuous repast upon the occasion; and in his carriage I proceeded to the scene of action. It was an extensive plain, with a rising ground commanding it, and, at the distance of about half a mile from this eminence, rose a little wood, in which the king, with his

From the *female ass* and *horse* the other kind of mule is engendered, with a disposition as obstinate as the ass, but the beauty and outward appearance of the horse.

Experience also shews us, that if the *male goat of Angora* marries with the *she goat*, the *kid*, the offspring of that intercourse, will inherit the external structure and *valuable coat* of its *father*; whereas, if the marriage is reversed, the kid so produced will have the *vile, worthless hair* of its *father*.

The breed from *Spanish* rams and *Swedish* ewes will resemble the *Spanish* sheep in wool, stature, and external form; and have the hardiness of *Swedish* sheep. An *English* ram without horns, and a *Swedish* horned ewe, will produce sheep without horns.

I shall now call the attention of my readers to only three or four vegetable *mules*, the origin of which I have witnessed myself.

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three sons, were hid, attended by their servants. For many days previous to this, two thousand men had been dispersed in parties over the whole country to disturb the game, and to drive it towards the common centre, by patroling night and day, and constantly, yet slowly, drawing nearer to each other. Soon after we had occupied our station on a rising ground, we began to see the deer at a vast distance bounding over the plain from every quarter, and making towards the fatal spot. As they approached, we heard, faintly at first, then more distinctly, the sound of guns, and saw the confusion of the game, moving quick in all directions, but changing their course at every instant, as if uncertain where to look for safety. When the scouring parties (usually about two thousand) came first in sight, they appeared to be separated by intervals, and to confine the game merely by their shouts and by the firing of their arms; but as they advanced upon the plain they formed a wall, and as they drew nearer, they strengthened this by the doubling of their ranks, compelling thus the game to pass in vast droves before the royal marksmen. Then began the carnage; and for more than a quarter of an hour the firing was incessant. Some of the deer, who had either more discernment than the rest, or a better memory; who were actuated by stronger fears, or, perhaps, by more exalted courage, absolutely refused to proceed, when they approached the ambuscade; and, making a quick turn, notwithstanding the shouts, the motions, and the firing of the guards, they leaped clean over their redoubled ranks, and escaped into the woods.

" When the firing ceased, the carriages all advanced towards the wood, and the company alighted to pay their compliments, and to view the game. We found part of it spread in two rows upon the field of battle, and the king, with his sons, surveying it. The game-keepers were returning loaded with such as had been mortally wounded, but had yet escaped to a considerable distance; and, as fast as they arrived, they deposited the spoil at the sovereign's feet. Having the curiosity to count the numbers, I found one hundred and forty-five deer, with one wild boar. Whilst thus engaged, I heard a murmur, and saw every one in motion. Directing my attention to the spot to which all were pressing, I saw at a distance a little company coming with a boar tied neck and heels together, and flung upon a pole. As they approached; the monarch and his sons, arming themselves afresh, drew up in a line, and standing at a convenient distance, the burthen was deposited; the cords, one after another, were cut; and the poor crippled animal was assaying to move, when a well directed volley freed him from his fears.

" The expence of that day's sport was reckoned at three hundred thousand reals, or, in sterling, three thousand pounds.

" In the evening the game, as usual, was all deposited in the room where the king took his supper, and there the family ambassadors attended to pay their compliments. By family ambassadors are understood those of Naples, Portugal, and France, who having more free access, and being expected to pay more minute attention, think it incumbent upon them to express their interest in every thing which gives him pleasure, and not only congratulate him upon these great occasions, but each night, whilst he is at supper, make inquiries, and afterwards inform their friends what the king has killed.

" Mr. Liston, desirous of quitting the Escurial previous to the departure of the court, ordered a *Coche de Colleras* to be ready the day after the BATIDA. This precaution is taken by the foreign ministers to secure *mules*, because, when the court is in motion, no less than *twenty thousand* being required for their use, the whole country is laid under an arrest, and neither horse nor mule can be obtained for any other purpose.

" In this little journey I was exceedingly diverted and surprised with the docility of the *mules* and the agility of their drivers. I had travelled all the way from Barcelona to Madrid in a *Coche de Colleras*, with seven mules, and both at that time, and on subsequent occasions, had been struck with the quickness of understanding in the *mule*, and of motion in the driver; but till this expedition I had no idea to what extent it might be carried. The two coachmen sit upon the box, and, of the six *mules*, none but the two nearest have reins to guide them; the four leaders being perfectly at liberty, and governed only by the voice. Thus harnessed, they go upon the gallop the whole way, and when they come to any short turning, whether to the right or to the left, they instantly obey the word, and move all together, bending to it like a spring. As all must undergo tuition, and require frequently some correction; should any one refuse the collar, or not keep up exactly with the rest, whether it be, for example, Coronela or Capitana; the name pronounced with a degree of vehemence, rapidly in the three first syllables and slowly in the last, being sufficient to awaken attention, and to secure obedience, the ears are raised, and the *mule* instantly exerts her strength. But, should there be any failure in obedience, one of the men springs furious from the box, quickly overtakes the offending *mule*, and thrashes her without mercy; then, in the twinkling of an eye, leaps upon the box again, and calmly finishes the tale he had been telling his companion. In this journey I thought I had learnt the names of all the *mules*, yet one, which frequently occurred, created some confusion, because I could not find to which individual it belonged, nor could I distinctly make out the name itself. It sounded like *Cagliostra*, and led me to imagine that the animal was so named after the famous impostor Cagliostro, only suiting the termination to the sex, because the mules in harness are usually females. In a subsequent journey the whole difficulty vanished, and my high estimation of the *mule*, in point of sagacity, was confirmed. The word in question, when distinctly spoken, was *aquella otra*; that is, *you other also*; and then supposing *Coronela* and *Capitana* to be pairs, if the coachman had been calling to the former by name, *aquella otra* became applicable to the latter, and was equally efficacious as the smartest stroke of a long whip; but if he had been chiding *Capitana*, in that case, *aquella otra* acted as a stimulus to *Coronela*, and produced in her the most prompt obedience."

The

FIRST EXAMPLE.

The VERONICA SPURIA (*Bastard Veronica*) is derived from the VERONICA MARITIMA (*Sea Veronica*) for its *mother*, and the VERBENA OFFICINALIS (*Officinal Vervein*) for its *father*.

It agrees with its *mother* in *fructification*, and in *foliage* it resembles the *father*.

It is not to be raised by seeds, but may easily be produced by means of layers.

SECOND EXAMPLE.

The DELPHINIUM HYBRIDUM (*Hybrid Larkspur*) was produced in that quarter of the garden where the DELPHINIUM ELATUM (*Bee Larkspur*) and ACONITUM NAPELLUS (*Common Monk's-hood*) grew together.

It resembles its *mother* most in the *fructification*, (the Larkspur,) and its *father* in its stately form, and appearance of its *foliage*.

Owing its origin to plants so nearly allied to each other, it is easily propagated by seeds.

THIRD EXAMPLE.

The HIERACIUM HYBRIDUM (*Mule Hawkweed*) was gathered in 1763 in our Alps by Dr. SOLANDER.

From its thick brown woolly *calyx*; from the *bracteæ*, as well as in every other part of the fructification, it so perfectly resembles its *mother* the APARGIA TARAXICI (*Alpine Apargia*) that no tyro but would at once perceive the plant; but in the smoothness of the *leaves*, by its teeth, and whole structure, it so manifestly resembles the *father*, the LEONTODON (*Dandelion*), that no one can hesitate whence the same was derived.

FOURTH EXAMPLE.

The TRAGOPOGON HYBRIDUM (*Hybrid Goat's-beard*) after two years appeared in the garden, where the TRAGOPOGON PRATENSE (*Common Goat's-beard*), and TRAGOPOGON PORRIFOLIUS (*Purple Goat's-beard*) grew together.

Last year, as the TRAGOPOGON PRATENSIS (*Common Goat's-beard*) was in flower, I castrated the flowers in bloom, and sprinkled their widowed *pistilla* with the *farina* obtained from the TRAGOPOGON PORRIFOLIUS (*Purple Goat's-beard*) and I obtained seeds, that being sown produced, in 1759, the TRAGOPOGON HYBRIDUM (*Bastard Goat's-beard*), as before described, the seeds of which I now send.

FIFTH EXAMPLE.

He who has once seen the ACHYRANTHUS ASPERA (*Rough Achyranthus*), its spike, the parts of the flower, its peculiarly formed nectary, and fructiferous reflexed calyxes, would readily believe, that no one could be mistaken in naming the same the ACHYRANTHUS INDICA (*Indian Achyranthus*); but seeing its broad obtuse, undulated foliage, before flowering, the same person would as positively have pronounced the same to be the XANTHIUM STRUMARIUM (*Small Burdock*).

I could name, unless I had chosen to adopt brevity, a multitude of other *hybrid* plants.*

It is more than probable, that Nature at first created but a few species, and by the intermixture of these arose the extensive genera, or families of plants, and even by the union of nearly allied genera, other kinds were produced: for Nature proceeds "from simple to more compound."

The *variety* of plants arises, I think, chiefly from sexual intercourse: for, unless this were the case, when removed into different quarters, and changed in their soil, the *variety* of the Species would return to their original appearance; but nothing of this sort takes place, as is daily seen in our most esteemed varieties of culinary plants.

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* Koelreuter, who for thirty years made experiments upon plants, performed what he calls "a complete metamorphosis of one natural species of plants into another;" which shews, that in seeds as well as in buds, the embryon proceeds from the male parent, though the form of the subsequent mature plant is in part dependent on the female.

M. Koelreuter impregnated a stigma of the NICOTIANA RUSTICA (*Common English Tobacco*) with the farina of the NICOTIANA PANICULATA (*Panicled Tobacco*), and obtained prolific seeds from it.

With the plants, which sprung from these seeds, he repeated the experiment, impregnating their pistilla with the farina of the NICOTIANA PANICULATA.

As the mixed plants, which he thus produced, were prolific, he continued to impregnate them for many generations with the farina of the NICOTIANA PANICULATA, and they became more and more like the male parent, till he at length obtained six plants in every respect perfectly similar to the NICOTIANA PANICULATA, and in no respect resembling their female parent the *Nicotiana Rustica*.

This ingenious experimentalist took the farina of the DIGITALIS PURPUREA (*Purple Foxglove*), and impregnated the pistillum of the DIGITALIS LUTEA (*Small Yellow Foxglove*), and he obtained an *hybrid*, which, instead of being either *purple* or *yellow*, was *striped*, and proved *perennial*, although its father is a biennial plant. *Vide Memoir in the Transactions of the Academy of Petersburgh, for the year* 1782.

The *Mule* Plants which have been ascertained are extremely numerous.

Mother, Arctotis tristis Father, Calendula pluvialis	*Bastard, Arctotis Calendula.*
M. Asclepias Vincetoxicum F. Cynanchum Acutum	*B. Asclepias Nigra.*
M. Primula Integrifolia F. Cortusa Mathioli	*B. Primula Cortusoides.*
M. Papaver Rhæas F. Chelidonium Corniculatum	*B. Chelidonium Hybridum.*
M. Dracocephalum Thymiflorum F. Nepeta Sibirica	*B. Dracocephalum Nutans.*
M. Brassica Eruca F. Sinapis Alba	*B. Brassica Vesicaria.*
M. Actæa Spicata F. Rhus Toxicodendron	*B. Actæa Spicata Alba.*
M. Trifolium Repens F. Trifolium Pratense	*B. Trifolium Hybridum.*
M. Rhus Toxicodendron F. Rhus Copallium	*B. Rhus Vernix.*
M. Tussilago Petasites F. Tussilago Alba	*B. Tussilago Hybrida.*
M. Urtica Pilulifera F Urtica Dioica	*B. Urtica Balearica.*
M. Thalictrum Aquilegifolium F. Thalictrum Minus	*B. Thalictrum Contortum.*
M. Alchimilla Alpina F. Alchimilla Vulgaris	*B. Alchimilla Hybrida.*
M. Veronica Spicata F. Veronica Officinalis	*B. Veronica Hybrida.*
M. Mentha Spicata F. Mentha Aquatica	*B. Mentha Crispa.*
M. Menyanthes Trifoliata F. Nymphæa Lutea	*B. Menyanthes Nymphœides.*
Mother, Poterium Sanguisorba Father, Agrimonia Eupatoria	*Bastard, Poterium Hybridum.*
M. Saponaria Officinalis F. Gentiana Aliqua	*B. Saponaria Hybrida.*
F. Aquilegia Vulgaris M. Fumaria Sempervirens	*B. Aquilegia Canadensis.*
F. Blitum Capitatum M. Chenopodium Rubrum	*B. Blitum Virgatum.*
M. Cochlearia Officinalis F. Brassica Orientalis	*B. Cochlearia Glastifolia.*
M. Arundo Epigejos F. Elymus Arenarius	*B. Arundo Arenaria.*
M. Helianthus Annuus F. Helianthus Tuberosus	*B. Helianthus Multiflorus.*
M. Cyanus Orientalis F. Centaurea Aliqua	*B. Centaurea Moschata.*
M. Carduus Oleraceus F. Carduus Serratuloides	*B. Carduus Tataricus.*
M. Dipsacus Fullonum F. Dipsacus Pilsous	*B. Dipsacus Laciniatus.*
M. Pyrola Rotundifolia F. Pyrola Secunda	*B. Pyrola Minor.*
M. Thalictrum Minus F. Thalictrum Flavum	*B. Thalictrum Angustifolium.*
M. Iris Graminea F. Iris Sibirica	*B. Iris Spuria.*
M. Carduus Crispus F. Carduus Nutans	*B. Carduus Acanthoides.*
M. Dryas Octopetala F. Geum Aliquod	*B. Dryas Pentapetala.*
M. Urtica F. Parietaria	*Urtica Alienata.*

One of the most extraordinary *hybrids*, unless it can be better referred to some of those very remarkable sportings of Nature, is seen in the PELORIA.

This *hybrid* is so named from the Greek word τελορια, *wonder*, or *astonishment*, for when first presented to Linnæus by one of his students in botany, he was greatly surprised to see an ANTIRRHINUM LINARIA (*Common Toad-flax*) in the shape of its leaves, its manner of growth, in its peculiar smell, but its flowers, instead of being personate, with one spur-like nectary, and four unequal stamina, had five equal stamina, five spur-like nectaries, a corolla formed like an inverted funnel, with the neck of it revolute, more nearly, therefore, resembling ERICA (*Heath*) in its fructification, but yet differing from this as to the number of stamina.

Being a *mule* from distinct genera, it cannot be propagated by seeds, but only by cuttings.

The *Quadrangular Passion-flower* appears to us to be an offspring betwixt the *Winged* and the *Common Blue Passion*, hence it most resembles its father the *Winged Passion-flower* in its *foliage*, but its mother the *blue* in its *flower*. Vide our Picturesque Botanical Plates of the several Passion-flowers, and description.

Vide also our Notes to the description of the *Carnation*, where a *Mule Pink* is in one of the notes particularly mentioned.

Here

Here then is a new field open for botanists, and a number of *new varieties* may be raised by *artificial impregnation*,† and if what I have written meets with your approba-

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† A *new* cabbage is described in the Bath Agriculture, Vol. I. Art. 4. which is said to fatten a beast six weeks sooner than *turneps*. It is there said, " that the sort of cabbage principally raised, is the *tallow-loaf*, or *drum-headed cabbage*; but it being *too tender* to bear sharp frost, I planted some of *this sort* and the *common purple-cabbage* used for pickling, (it being the *hardiest* I am acquainted with) alternately; and when the seed-pods were perfectly formed, I cut down the *purple*, and left the other for seed. This had the desired effect, and produced a *mixt stock* of a *deep green colour* with *purple veins*, retaining the *size* of the *drum head*, and acquiring the *hardiness* of the *purple*."

In another curious paper of the Bath Society, Vol. V. p. 38. Mr. Wimpey relates, that he planted a field with garden-beans in rows about three feet asunder in the following order, *mazagan, white-blossom, long-podded, Sandwich-toker*, and *Windsor-beans*. The mazagan and white-blossom were thrashed first, when to his great surprise he found many new species of beans; those from the mazagan were mottled black and white; the white blossoms were brown and yellow instead of their natural black; and they were both much larger than usual.

Mr. Knight has given a curious experiment of his impregnating the stigmas of the pea-blossoms of one variety with the farina of another. He says, Vide his Treatise on the Apple and Pear, p. 42, " Blossoms of a small white garden-pea, in which the males had previously been destroyed, were impregnated with the farina of a large clay-coloured kind with purple blossoms. The produce of the seeds thus obtained were of a dark grey colour, but these having no fixed habits, were soon changed by cultivation into a numerous variety of very large and extremely luxuriant white ones; which were not only much larger and more productive than the original white ones, but the number of seeds in each pod was increased from seven or eight, to eight or nine, and not unfrequently to ten. The newly made grey kinds I found were easily made white again by impregnating their blossoms with the farina of another white kind. In this experiment the seeds, which grew towards the point of the pod, and were by position first exposed to the action of the male, would sometimes produce seeds like it in colour, whilst those at the other end would follow the female.

" In other instances the whole produce of the pod would take the colour of one or other of the parents; and I had once an instance in which two peas at one end of a pod produced white seeds like the male, two at the other end grey ones like the female, and the central seeds took the intermediate shade, a clay colour. Something very similar appears to take place in animals, which produce many young ones at a birth, when the male and female are of opposite colours. From some very imperfect experiments I have made, I am led to suspect that considerable advantages would be found to arise from the use of new or regenerated varieties of wheat, and these are easily obtained, as this plant readily sports in varieties, whenever different kinds are sown together."

This practice of the very ingenious Mr. KNIGHT is not, however, a new one, for it was recommended by BRADLEY as far back as 1736.

" By this knowledge," says Bradley, " we may perhaps alter the property and taste of any fruit, by impregnating the one with the *farina* of another of the same class: as, for example, a *Codlin* with a *Pearmain*, which will occasion the *Codlin* so impregnated to last a longer time than usual, and be of a sharper taste; or if the winter fruits should be fecundated with the dust of the summer kinds, they will decay before their usual time: and it is from this accidental coupling of the *farina* of one with the other, that in an orchard where there is variety of *apples*, even the fruit gathered from the same tree differ in their flavour and times of ripening: and moreover, the seeds of those *apples* so generated, being changed by that means from their natural qualities, will produce different kinds of fruits, if they are sown.

" It is from this accidental coupling, that proceeds the numberless varieties of fruits and flowers which are raised every day from seed. The yellow and purple *Auriculas*, which were the first we had in England, coupling with one another, produced seed which gave us other varieties; which again mixing their qualities in like manner, has afforded us, by little and little, the numberless variations which we see at this day in every curious flower-garden; for I have saved the seeds of near a hundred plain *Auriculas*, whose flowers were of one colour, and stood remote from others, and that seed I remember to have produced no variety: but on the other hand, where I have saved the seed of such plain *Auriculas* as have stood together, and were differing in their colours, that seed has furnished me with great varieties, different from the mother plants. I believe I need not explain how the male dust of plants may be conveyed by air from the one to another, by which this generation and production of new plants is brought about; but I shall hint by the bye, to such as plant orchards for cyder, that they ought to plant only one sort of *apple* in those orchards; and that such plantations be likewise remote from other kinds of *apples*, whose *farina* would else certainly spoil the cyder-fruit, by ripening some sooner, and others later, which would occasion almost a continual ferment in the liquor, and never permit it to settle or grow fine.

" Moreover, a curious person may, by this knowledge, produce such rare kinds of plants, as have not yet been heard of, by making choice of two plants for his purpose, as near alike in their parts, but chiefly in their flowers or seed-vessels: for example, the *Carnation* and *Sweet William* are in some respects alike; the *farina* of the one will impregnate the other, and the seed so enlivened will produce a plant differing from either, as may now be seen in the garden of Mr. Thomas Fairchild of Hoxton, a plant neither *Sweet William* nor *Carnation*, but resembling both equally, which was raised from the seed of a *Carnation* that had been impregnated by the *farina* of the *Sweet William*. These couplings are not unlike that of the *mare* with the *ass*, which produces the *mule*; and in regard to *generation*, are also the same with *mules*, if of different kinds, not being able to multiply their species, no more than other monsters generated in the same manner.

" We may learn from hence, that the fruit of any tree may be adulterated as well by the *farina* of one of the same sort, which perhaps may be sickly, and of a dwarf kind, as by the dust of some other kind near akin to it, and worse than itself. Now, as such couplings may be very frequent in common woods, so would I recommend the choice of seed to be made only from such plants or timber-trees as excel in greatness, or other good qualities, and are far distant from others of meaner sorts, which might degenerate their seeds, and cross our expectations when they come to grow up; and this is as necessary to be observed among *vegetables*, to maintain their good qualities in the young plants they are to produce, as it is in the breeding of *game-cocks, spaniels*, or *running-horses*."

There is an apple described in Bradley's work, which is said to have one side of it a sweet fruit, which boils soft, and the other side a sour fruit, which boils hard. This Mr. Bradley so long ago as the year 1721 ingeniously ascribes to the farina of one of these apples impregnating the other; which would seem the more probable, if we consider, that each division of an apple is a separate womb, and may therefore have a separate impregnation, like puppies of different kinds in one litter. The same is said to have occurred in oranges and lemons, and grapes of different colours.

I have seen myself a curious instance of a *Nectarine Tree* produce its fruit half *Nectarine* half *Peach*.

tion, I shall consecrate the remainder of my days to making these experiments, so much recommended from their agreeable results.

Duhamel has also greatly extended our knowledge on this curious and interesting subject.

" On sait que la plupart des fruits que les Jardiniers appellent *nouveaux*, ne paroissent être que des composés de fruits plus anciens. Le *Colmar*, par exemple, qui passe chez les Jardiniers pour être venu d'un pepin de bon-chrétien, paroît effectivement être composé du bon-chrétien et de la bergamotte d'automne.

" Je suis persuadé que si l'on goûtoit avec une grande attention les fruits d'especes nouvelles, on trouveroit plusieurs exemples de pareils *métifs*: j'avoue néanmoins qu'il se trouve des fruits d'un goût et d'une forme tellement extraordinaire, qu'il seroit difficile d'en assigner l'origine; mais ces exemples rares ne sont pas capables de détruire ma conjecture, puisque ces bizarreries peuvent être occasionnées par un mélange des deux seves; d'autant plus que dans les animaux, entre les chiens par exemple, la même incertitude arrive frequemment.

" Le contraire de cette observation se présente dans certains fruits, où les especes sont assez distinctes pour qu'on puisse manger un quartier d'un fruit séparément de celui avec lequel il est joint lors de la fécondation. Tel est, par exemple, dans les oranges, l'espece que l'on nomme improprement *monstre*, qui sur le même arbre produit des bigarades, des citrons, et des balotins séparés, ou même rassemblés par quartiers dans le même fruit: telle est aussi cette espece de raisin qui produit sur un même cep des grappes rouges et des grappes blanches, et sur une même grappe des grains rouges et des grains blancs; ou d'autres, *dont les grains sont par moitié, ou même par quartiers rouges et blancs.* Je crois pouvoir attribuer ces variétés au mêlange des poussieres des étamines. Il arrive très-fréquemment que dans la même portée, une chienne met bas des petits dont les uns tiennent entiérement de leur mere, les autres du pere, et d'autres tiennent de tous les deux; ou tellement confondues, qu'aucune de leurs parties ne ressemble exactement aux mêmes parties ni du pere ni du la mere, ni d'une façon assez distincte pour qu'une partie de leur corps ressemble au pere, et l'autre à la mere: ce que je puis assurer, c'est que j'ai tenté sans succès tous les moyens que les Auteurs proposent comme propres à opérer ces bizarreries de la nature.

" Je pense donc qu'on peut avoir recourse à la même conjecture, pour rendre raison des variétés infinies que fournissent certains genres de plantes; puisqu'elles sont d'autant plus fréquentes, que les différentes especes d'un même genre se trouvent rassemblées en plus grand nombre: au lieu que les plantes d'un même genre qui croissent à la campagne, étant en quelque façon isolées, ne donnent aucune variété. Je vais en rapporter des exemples.

" Personne n'ignore que tous les *Coquelicots* qui croissent naturellement dans les campagnes, portent des fleurs rouges; que les *Primeveres* des prés ont des fleurs couleur de citron; et que ces mêmes plantes transplantées dans nos jardins nous fournissent une quantité prodigieuse de variétés. D'où peut venir cette différence? Je l'attribue à cette fécondation d'une plante par une autre; et je vais rapporter une expérience qui pourra convaincre que cette cause existe réellement dans la nature.

" Je suppose qu'on leve dans un pré une talle de ces *Prime-veres*, qui ne portent constamment que des fleurs couleur de citron; qu'on divise cette talle en deux, qu'une moitié soit plantée dans un lieu élogné de toute autre espece de *Prime-veres*, et l'autre dans un jardin, au milieu d'une plate-bande où l'on aura élevé une grande suite de Primeveres de toutes couleurs: il est certain que ces deux talles produiront, comme dans les prés, des fleurs couleur de citron; mais si l'on ramasse ensuite les graines que fourniront ces deux talles, et qu'on les seme séparément; on remarquera 1°. Que les pieds qui viendront des semences qui auront été produites par le pied qui étoit resté isolé, ne donneront que des fleurs jaunes pareilles à celles des prés, parce que ces graines n'auront pû être fécondées que par elles-mêmes; au lieu que les pieds qui viendront de la talle qu'on aura élevée dans la plate-bande, produiront quelques variétés; par la raison que quelques semences auront pu être fécondées par d'autres pieds voisins. Je dis qu'on n'aura que quelques variétés, parce que la plûpart des embryons auront été fécondés par les étamines de la plante même; et que d'ailleurs plusieurs qui auront été fécondés par les pieds voisins, conserveront néanmoins une disposition à tenir de la nature du pied qui les aura produits.

" Je crois qu'on peut attribuer à une pareille cause, le succès qu'ont eu quelques Fleuristes qui se sont procuré par le moyen des semences de belles variétés; puisque rien n'est plus propre à les occasionner que le soin particulier que prennent certains curieux de mêler les especes dans leurs planches de Tulippes, d'Oreilles d'ours, de Semi-doubles, &c. Leur intention est, à la vérité, de frapper la vûe par une diversité et un émail qui est toujours plus agréable qu'une uniformité dans les couleurs; mais ils se procurent, sans le savoir, un avantage qu'ils ont souvent attribué à différentes infusions dans lesquelles ils avoient mis tremper leurs graines, à quelques couleurs qu'ils mêloient dans la terre de leur jardin, à des objets différemment colorés qu'ils présentoient à leurs plantes, ou enfin, à une faveur singuliere du hazard qu'ils se croyoient personnelle. J'ai essayé sans succès ces infusions et ces mêlanges de couleurs, et j'ai cru qu'il n'étoit pas besoin d'expériences pour détruire les deux autres moyens.

" Les Observateurs attentifs peuvent trouver dans les potagers beaucoup d'exemples des variétés dont nous venons de parler, et cesser d'attribuer à la nature de leur terrein, ces changements qu'ils experiment en disant, que leurs plantes dégénerent. J'en vais rapporter un exemple qui est sans doute bien frappant.

" Nous cultivons dans nos potagers, la *Rave-corail*, qui est cette rave rouge qu'on éleve aux environs de Paris: nous cultivons aussi une rave blanche et moins délicate, qu'on nomme *Raifort à Orléans*; enfin, des Radix blancs et des Radix gris. Quand nous semons des graines de ces plantes que nous tirons des pays où elles sont communément cultivées, nous recueillons ces racines très-parfaites chacune dans leur espece; mais comme nous avons souvent remarqué que les semences que nous recueillons dans nos potagers nous donnoient des métifs qui tenoient plus ou moins de ces différentes racines, nous avons pris le parti de planter fort éloignés les uns des autres, les pieds que nous destinons à nous fournir de la graine; au moyen de quoi nos especes se conservent plus constamment les mêmes: cette observation que nous avons pareillement faite sur les *Carottes* pâles, jaunes et rouges, confirme bien fortement ce que nous avons dit qui peut résulter du mêlange des poussieres.

" Après cela, il est très-facile de concevoir quelle prodigieuse multitude de variétés doit naître de ces différents mêlanges: en effet lorsque la poussiere des étamines d'une Oreille-d'ours *rouge* aura fécondé une Oreille-d'ours *blanche*, la graine qui en viendra doit nécessairement produire des pieds dont lés pétales seront non-seulement rouges ou blancs, ou panachés de rouge et de blanc, mais encore dont les embryons et les poussieres des étamines participeront de l'un et de l'autre pied; ensorte qu'une de ces plantes n'a plus besoin, pour êtra panachée, d'être dans la suite fécondée par une autre, puisqu'elle se trouvera posséder non-seulement la disposition des parties propres à produire le rouge et le blanc, mais encore celle d'opérer différents mêlanges de ces deux couleurs, lesquelles combinées ensemble pourront faire différentes coupes de nuances fort agréables à la vûe.

" Je

I shall not tire your patience any longer, having, I hope, demonstrated the *Sexes of Plants** by every kind of argument, even by that of *Hybrid Plants,* which I hold to be the most conclusive.

" Je pourrois faire l'application de ce que je viens de dire au jaune, au bleu, au rouge et au verd; mais je crois en avoir assez dit pour faire entendre que la multitude des variétés est aussi étendue que peuvent l'être les combinaisons qui résultent de ces différents mêlanges; et rien n'est plus conforme à ce que l'on peut observer dans la multiplication des animaux. J'ai eu chez moi des paons bleus, qui, à chaque couvée, donnoient des paons blancs et des paons bleus, parce que cette race avoit été produite par un paon blanc et une paone bleue. J'ain vû chez M. le Marquis de Gouvernet, un paon d'une beauté admirable, dont le plumage étoit en partie blanc, et en partie bleu. Enfin, comme je l'ai déja dit, deux chiens de différente espece produiront des métifs: ces métifs en produiront d'autres; et ces divers mêlanges occasionneront par la suite une prodigieuse quantité de variétés."

* This question on the Sexes of Plants, so honourably proposed by the Imperial Academy, was destined to end this controversy, and much to the honour of that great Nation, SIGESBECK, who had furiously written against the Sexual System, and was Professor of Botany at Petersburgh, not being able to reply, was rejected from among the Members of the Imperial Academy, and afterwards humbly solicited Linnæus to become a superintendant, or head gardener, at Upsal. Linnæus, who never wished to triumph over a fallen enemy, named a plant *Sigesbeckia,* in honour of this fallen Professor.

PART SECOND.

THE
Sexual System
of
CAROLUS VON LINNÆUS

TOMKINS *fecit*

COOPER *sculp*

London Published 1st D.r Thornton June 1.1809.

Hoffman Pinx.t

LINNÆUS IN HIS LAPLAND DRESS.

From an original Picture in the Possession of D.r Thornton.

Dunkarton Sculp.t

H. Kingsbury Sculp.

LINNÆUS EXPLORES LAPLAND.

Fir'd by the charms of Nature's reign,
View the bold sage advent'rous stray:
Rude storms around him rage in vain,
And torrents cross his dang'rous way.

Alone beside the roaring main
'Mid shelving rocks he loves to roam,
Where craggy cliffs, and caverns wide,
Re-bellow to the whitening foam.

Nor flies the fowl, nor mid the deeps
Swim in bright maze the silver brood,
Nor springs the plant, nor insect creeps,
That can his piercing glance elude.

New scenes his raptur'd sight surveys
Amid Lapponia's peaceful soil;
And while with ardent zeal he strays,
Fair science crowns his pleasing toil.

Through many a forest dark and drear,
O'er many a desert's trackless side,
With fearless foot he ranges round
With Heaven and Nature for his guide.

Now to yon mountain's airy height
With look elate behold him rise,
And view with still increas'd delight
A midnight sun illume the skies.

The simple swain with wond'ring eye
Beholds him spring with eager bound;
Chase with fleet steps the noxious fly,
Or pore upon the moss-clad ground.

Now down Lulea's haunted stream
His vent'rous bark pursues its way,
While round the waving meteors gleam,
And cataracts urge their dashing spray.

Hail Nature's boast! triumphant sage!
Whom distant cent'ries shall admire;
Whose name, rever'd through ev'ry age,
Shall never but with time expire!

Shaw.

ORIGIN OF THE SEXUAL SYSTEM.

LINNÆUS was ushered into the world in the month of May, 1707, and, as this great Naturalist observes in his Diary, "his parents received their first-born with joy, and devoted the greatest attention to impressing on his mind the love of virtue, both by precept and example. The same thing that is said of a poet, '*Nascitur non fit*,' may be, without impropriety, applied to the subject of this memoir. From the very time that he first left his cradle, he almost lived in his father's garden, which was planted with some of the rarer shrubs and flowers; and thus were kindled, before he had well left his mother's arms, those sparks, which afterwards produced such a blaze." As he advanced in youth, it is mentioned in the Diary, "that he never ceased harassing his father with questions about the names, qualities, and nature of every plant he saw, and often used to enquire more than even his father, who was an expert botanist, was able to answer." "Whilst at school," the Diary continues, "he employed his play hours hunting after plants," hence he was called "The Little Botanist." He had made an Herbarium "at this early period," and "his plants were classed after the system of TOURNEFORT." From school he went to "the university of Lund." Thence he removed to the famous university of "Upsal." Here an accident brought him early into notice. "In the autumn of the year 1729, LINNÆUS was examining very intensely some plants in the Academic Garden, when CELSUS, a venerable Divine, happened to have repaired thither for the same purpose. They fell into conversation, and CELSUS was so struck with admiration at the vast knowledge of plants discovered by LINNÆUS, that he requested him to bring his Herbarium along with him, which was even then very rich, and live with him free of every expense." LINNÆUS frankly observes in his Diary, "that in the library of CELSUS he first saw a review in the *Leipsic Commentaries* of VAILLANT'S 'Discourse on the Structure of Flowers,' which strongly inculcates *the Sexes of Plants*,* and that this induced him to be more attentive to the Stamina and Pistilla in flowers, and that after minute and diligent examination, he found them to vary even as much as the Petals themselves; upon which last circumstance the famous system of TOURNEFORT is founded." The result of this extended enquiry LINNÆUS committed to writing, and CELSUS was so pleased with this manuscript treatise on the Sexes of Plants, that he sent it to RUDBEC, the Professor of Botany at Upsal, who expressed much approbation, and in consequence desired LINNÆUS to be sent to him. The result of their meeting was the appointment of LINNÆUS as lecturer in the room of RUDBEC, who was now too far advanced in years to continue lecturing. LINNÆUS, therefore, gave his first public lecture in that university in the spring of 1730, and although only *twenty-three years of age*, was received by the pupils with every flattering mark of approbation; and RUDBEC appointed him also tutor to his sons, and he enjoyed, in the house of the aged professor, every

* The discovery of *the Sexes of Plants* is often arrogated by the French to VAILLANT, but justly belongs to our own countryman, Sir THOMAS MILLINGTON. Vide a note to our translation of Linnæus's "*Dissertation on the Sexes of Plants*," where the time and manner of this discovery is given.

opportunity of further improvement. RUDBEC had formerly travelled over *Lapland* in the year 1679, at the command of CHARLES XI. but his journal was destroyed by the great fire at Upsal in 1702; but the ancient professor, with the garrulity of old age, would often discourse with him of his "young encounters," what he had seen, the new plants he had discovered, and he kindled up an ardent desire in the youthful mind of LINNÆUS to visit those regions. Providence appears always to have interfered for his advancement. GUSTAVUS ADOLPHUS, the reigning monarch, had directed the *Royal Academy* of *Sweden* to appoint some person to explore the natural productions of the Arctic Regions. Every eye was on this occasion naturally turned towards LINNÆUS, and, notwithstanding the sacrifice, even RUDBEC wished to see his former labours revive by those of his successor. LINNÆUS had even at this period planned out his *Sexual System*, but no body of plants had been arranged under it, which was another great stimulus to the active enterprizing mind of LINNÆUS to accept the lure of ambition held out by the *Royal Academy*. Accoutred as he appears in our painting, he visited the whole of Lapland in the year 1732.

Solus Hyperboreas glacies, Tanaimque nivalem,
Arvaque Rhipæis nunquam viduata pruinis
Lustrabat.....

VIRG. GEORG.

This gave origin to his first immortal work, the "*Flora Lapponica*," where LINNÆUS relinquished all former systems, and arranged the Northern Plants he had collected according to their Sexes, which greatly excited the attention of the botanist, and the world, towards THE SEXUAL SYSTEM.*

This system at first had to encounter the opposition of men of the highest literary eminence in every country. In *Russia* it met with a most violent and bigotted opposition from SIGESBECK; in *Germany*, the envious resentment of HEISTER; in *France*, the ridicule of BUFFON; in *Switzerland*, the enlightened, but still prejudiced, rejection of HALLER; in *Italy*, the decided and laborious opposition of PONTEDERA; and in *England*, the sarcastic and futile objections of ALSTON; whilst at home it was much opposed from the general envy of merit. But it soon triumphed over every obstacle, and notwithstanding the celebrated works of a TOURNEFORT and a JUSSIEU, it is, even at this day, received as the predominant system in *France*, a country justly celebrated for the number of its learned men, and the general thirst after real knowledge, and great encouragement to science, and men of letters, but suspected of being extremely *national*; whilst in *Russia*, *Germany*, *Switzerland*, *Italy*, and *England*, although there are *fifty-two* different systems of Botany, and we can boast of a RAY, yet the SEXUAL ONE is the only System that is *universally* adopted.

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* The reader must feel gratified at being informed, that "*A View of the Life and Writings of Linnæus*," was some time back published by the late learned Dr. PULTENEY, of which admirable performance a new edition has lately appeared, with very considerable additions and improvements, by his very ingenious and no less learned nephew, Dr. MATON, Vice-President of the Linnæan Society, in which the *Diary* complete, from the MS. of LINNÆUS, may be seen, which cannot fail to interest every person who has any taste for science, or regard for extraordinary talents, and pre-eminent virtue. For further, and full particulars, respecting the life of so transcendent a genius, we must beg leave to refer to that excellent work, and also to "*Travels into Lapland*," a translation of which, from LINNÆUS's MS. will shortly be published by the illustrious President of the Linnæan Society, Dr. SMITH.

EXPLANATION OF THE ANALYSIS*

OF THE

SEXUAL SYSTEM

OF

CAROLUS VON LINNÆUS.

THE method of ANALYSIS is called by *Logicians,* THAT OF INVENTION, for it is the mode in which knowledge is acquired, and shews the progressive steps by which we advance in the acquisition of *complex ideas.* Here we are taught to *compare,* to *reason,* to *determine,* to *adopt,* and *separate*; and, finally, in this way we arrive at certain conclusions, or *truth.* It is a mode admirably calculated for the exercise and strengthening of our reasoning powers, being the same also as that pursued by *Mathematicians.*

Thus then is the *systematic study of Botany* one of the best books of logic, or reasoning, in the world; or, as some persons might wish to degrade it, a *manly sort* of PUZZLE, but surely as *instructive* as it is *amusing!*

A person who is in the pursuit of the CLASS and ORDER of any *unknown flower* may be said to be upon a BOTANICAL JOURNEY, and the plant being his *Directory,* if he can read the botanical characters impressed on it by the pen of Nature, he will certainly, following *system,* very soon arrive at his journey's end.

In our first start we have two '*Comparisons*' to make,

I. Whether the Sexes are 'VISIBLE,' or
II. Whether the Sexes are 'INVISIBLE.'

That is, *whether* the *naked eye* can *discern* the *Pistillum* and *Stamina,* or *not.*

If 'THE SEXES ARE NOT VISIBLE,' he has already reached the object of his destination, the plant, whose fructification he holds in his hand, comes under Class XXIV. 'CRYPTOGAMIA' of Linnæus.

If, on the reverse, 'THE SEXES WERE VISIBLE,'....that is, the *Stamina* and *Pistilla* apparent to sight....he has now three *Comparisons* to make, which may be called the '*second stage*' of his Journey. He has carefully to examine

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* Vide Plate of the Analysis of the Sexual System.

I. Whether

I. Whether the flowers are 'BISEXUAL,'
II. Whether the flowers are 'UNISEXUAL,' or
III. Whether the flowers are 'MIXED.'

By 'BISEXUAL' plants are underſtood such, whose *flowers* have their *Stamina* and *Pistilla* (the *male* and *female parts* of *Plants*) inclosed within the *same corolla.*

By 'UNISEXUAL,' such as produce *flowers* with the *Stamina* and *Pistilla* placed in *different corollas*

Lastly, by 'MIXED,' is understood a *mixture* of the *two kinds of flowers,* 'BISEXUAL,' and 'UNISEXUAL.'

Having made tho necessary examination, if the Sexes are 'MIXED,' he is at once arrived at his journey's end, his plant is of the Class XXIII. POLYGAMIA.

If 'UNISEXUAL,' he has one of two roads to take,

I. The two Sexes are either 'ON THE SAME PLANT,' or
II. The two Sexes are 'ON DIFFERENT PLANTS.'

That is, STAMEN-BEARING flowers (*male* flowers) and PISTIL-BEARING flowers (*female* flowers) are in the former instance to be found on the *same* plant, produced from the *same* root,...and in the latter case, the correspondent *male* and *female* flowers, are found on *different* plants, produced on *different* roots.

His plant being as the directing post, he reads the botanical inscription, and discovers his plant to come either under the Class XXII. 'DIŒCIA,' or Class XXI. 'MONŒCIA.'

But if the flower was BISEXUAL, he has another course to take, and he has to see,

I. Whether the 'ANTHERS' are 'SEPARATE,' or
II. Whether the 'ANTHERS' are 'UNITED.'

If he finds five 'ANTHERS UNITED' round the *Pistillum,* he has reached the object of his destination, namely Class XX. 'SYNGENESIA.'

If the 'ANTHERS' were 'SEPARATE,' he has to advance a '*fourth stage,*' and to see,

I. Whether the 'FILAMENTS' are 'SEPARATE,' or
II. Whether the 'FILAMENTS' are 'UNITED WITH EACH OTHER,' or,
III. Whether the 'FILAMENTS' are 'UNITED WITH THE PISTILLUM.'

If the *Filaments arise* from *any part* of the *Pistillum,* or from a *pedicle* (column) *elevating the Pistillum,* the plant is then of Class XIX. 'GYNANDRIA.'

If the 'FILAMENTS ARE UNITED WITH EACH OTHER,' (these being joined together with a membrane), they are either,

I. All of them united, 'FORMING ONE BODY,' or,
II. Divided into 'TWO PARCELS,' making two bodies, or,
III. Divided into 'THREE, OR MORE PARCELS,' each parcel being united.

If UNITED TOGETHER, but forming 'THREE, OR MORE PARCELS,' the flower falls under the Class XVIII. 'POLYADELPHIA,'...if forming 'TWO BODIES,' under Class XVII. 'DIADELPHIA,' ...and only 'ONE BODY,' Class XVI. 'MONODELPHIA.'

But if the 'FILAMENTS' were 'SEPARATE,' he has to examine,

I. Whether these are 'PROPORTIONABLY LONG,' or,
II. Whether these are of "DIFFERENT LENGTHS.'

Of

Of DIFFERENT LENGTHS relate only to four or six stamina...If his flower has 'SIX STAMINA,' and of these he finds 'FOUR LONG and TWO SHORT, he has reached his destination, Class XV. 'TETRADYNAMIA,'...if 'FOUR STAMINA,' 'TWO' of these 'BEING LONG and 'TWO SHORT,' he discovers his plant to be of the Class XIV. 'DIDYNAMIA.'

If his flower falls under none of the former considerations, he has an easy task now assigned him, only count 'NUMBERS;' but if these amount to 'TWENTY OR MORE STAMINA,' he has also to attend to '*insertion*.'

I. Whether 'INSERTED ON THE CALYX OR COROLLA, or,

II. Whether 'INSERTED ON THE RECEPTACLE.'

If 'INSERTED ON THE RECEPTACLE,' the Class is XIII. 'POLYANDRIA,'...and if on the calyx or corolla, Class XII. 'ICOSANDRIA.'

The other comparisons are equally easy, as Class XI. 'DODECANDRIA, TWELVE TO NINETEEN STAMINA.'...Class X. 'DECANDRIA, TEN STAMINA.'...Class IX. 'ENNEANDRIA. NINE STAMINA.'....Class VIII. 'OCTANDRIA, EIGHT STAMINA.'....Class VII. 'HEPTANDRIA, SEVEN STAMINA.'...Class VI. 'HEXANDRIA, SIX STAMINA.'...Class V. 'PENTANDRIA, FIVE STAMINA.'.....Class IV. 'TETRANDRIA, FOUR STAMINA.'....Class III. 'TRIANDRIA, THREE STAMINA.'....Class II. 'DIANDRIA, TWO STAMINA.'....Class I. 'MONANDRIA, ONE STAMEN.'

After this *Analysis* or *Separation*, the student should take the classes in the reverse order, commencing with Class I. MONANDRIA, and ending with Class XXIV. CRYPTOGAMIA.*

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* Vide our *Synthesis* of the CLASSES and ORDERS of the SEXUAL SYSTEM, immediately following the Table of *Analysis*.

ANALYSIS of the Sexual System OF Carolus Von Linnæus.

Symbolical Representation of the Sexual System.

Sixth. — *Seventh Comparison.* — SIGNS. (h) — CLASSES

Fifth. — Proportionably long;

- 1 Stamen. *(Monándria)* — I. MONÁNDRIA.
- 2 Stamina. *(Diándria)* — II. DIÁNDRIA.
- 3 Stamina. *(Triándria)* — III. TRIÁNDRIA.
- 4 Stamina. *(Tetrándria)* — IV. TETRÁNDRIA.
- 5 Stamina. *(Pentándria)* — V. PENTÁNDRIA.
- 6 Stamina. *(Hexándria)* — VI. HEXÁNDRIA.
- 7 Stamina. *(Heptándria)* — VII. HEPTÁNDRIA.
- 8 Stamina. *(Octándria)* — VIII. OCTÁNDRIA.
- 9 Stamina. *(Enneándria)* — IX. ENNEÁNDRIA.
- 10 Stamina. *(Decándria)* — X. DECÁNDRIA.
- 12 to 19 Stamina. *(Dodecándria)* — XI. DODECÁNDRIA.

1. *Classes derived from the Consideration of the Number of* STAMINA.

Fourth. — Filaments feparate;

- 20, or more Stamina.
  - Inserted on the Calyx or Corolla. *(Icosándria)* — XII. ICOSÁNDRIA.
  - Inserted not on the Calyx, but on the Receptacle. *(Polyándria)* — XIII. POLYÁNDRIA.

2. *Number and Insertion.*

- or, of different Lengths.
  - 4 Stamina, 2 above. *(Didynámia)* — XIV. DIDYNÁMIA.
  - 6 Stamina, 4 above. *(Tetradynámia)* — XV. TETRADYNÁMIA.

3. *Number and Proportion.*

Third. — Anthers separate;

- (f) or, Filaments united with each other;
  - Forming, one Body; *(Monodélphia)* — XVI. MONODÉLPHIA.
  - Two Bodies; *(Diadélphia)* — XVII. DIADÉLPHIA.
  - Three Bodies. *(Polyadélphia)* — XVIII. POLYADÉLPHIA.
- (g) or, with the Pistillum. *(Gynándria)* — XIX. GYNÁNDRIA.

or, Anthers united. *(Syngenésia)* — XX. SYNGENÉSIA.

4. *Union.*

Second Stage. — (c) Bisexual;

1st Comparison. — (a) with the Sexes Visible;

- (d) or, Unisexual;
  - The two Sexes on the same Plant; *(Monœcia)* — XXI. MONOŒCIA.
  - or, on different Plants. *(Diœcia)* — XXII. DIOŒCIA.
- (e) or, Mixed. *(Polygámia)* — XXIII. POLYGÁMIA.

5. *Separation.*

FLOWERS.

(b) or, Invisible. *(Cryptogámia)* — XXIV. CRYPTÓGAMIA.

6. *The Stamina Invisible.*

Notes.

a) Stamina and Pistilla perceptible. (b) Stamina and Pistilla not discernible. (c) Stamina and Pistilla in the same Corolla. (d) Flowers having the Stamina and Pistilla in separate Corollas. (e) Unisexual flowers also Bisexual. (f) As fowls have their toes webbed. (g) It should be added; or fixed upon a pillar elevating the Pistillum.

(h) A slice of Cork stands for a Corolla or Calyx. | a Pin for a Stamen. Do. with a Piece of Cork at the point for a Pistillum.

ON inven. — TOMKINS *scr.* — COOPER *sculp.*

London Published by Dr. Thornton January 8 1807

ORDERS
of the
Sexual System.

TABLE.

TOMKINS *scrip.t* — COOPER *sculp.t*

SECTION I. THE ORDERS *of the following thirteen Classes* I. MONÁNDRIA, II. DIÁNDRIA, III. TRIÁNDRIA, IV. TETRÁNDRIA, V. PENTÁNDRIA, VI. HEXÁNDRIA, VII. HEPTÁNDRIA, VIII. OCTÁNDRIA, IX. ENNEÁNDRIA, X. DECÁNDRIA, XI. DODECÁNDRIA, XII. ICOSÁNDRIA, XIII. POLYANDRIA, *are taken from the* NUMBER *of* PISTILLA, *and terminate in* GYNIA, *as the Classes did in* ANDRIA, *with the Greek Numerals preceding; thus,*

Orders.		
I.	MONÓGYNIA,	*One Pistillum.*
II.	DIGYNIA,	*Two Pistilla.*
III.	TRÝGYNIA,	*Three Pistilla.*
IV.	TÉTRAGYNIA,	*Four Pistilla.*
V.	PENTÁGYNIA,	*Five Pistilla.*
VI.	HEXÁGYNIA,	*Six Pistilla.*
VII.	HEPTÁGYNIA,	*Seven Pistilla.*
VIII.	OCTÓGYNIA,	*Eight Pistilla.*
IX.	ÉNNEÁGYNIA,	*Nine Pistilla.*
X.	DÉCÁGYNIA,	*Ten Pistilla.*
XI.	DODÉCÁGYNIA,	*Twelve Pistilla.*
XII.	POLÝGYNIA,	*Many Pistilla.*

SECT. II. *Class* XIV. DIDYNÁMIA *has the* ORDERS, *taken from the* SITUATION *of the* SEEDS.

Orders.		
I.	GYMNÓSPERMIA	*Naked Seeds.*
II.	ANGIÓSPERMIA,	*Covered Seeds (Seeds Capsuled.)*

SECT. III. *Class* XV. TETRADYNÁMIA, *has its* ORDERS, *from a* DIFFERENCE *in the* SHAPE *of the* SEEDVESSEL.

Orders.		
I.	SILICULÓSA,	*Pod a Silicle (a broad Pod.)*
II.	SILIQUÓSA,	*Pod a Silique (a long Pod.)*

SECT. IV. *Classes,* XVI. MONODELPHIA. XVII. DIADELPHIA. XVIII. POLYADELPHIA. *(for Class* XIX *vide* SECT. V.*) also Class*, XX. GYNANDRIA. *have their* ORDERS *taken from the* NUMBER *of* STAMINA; *thus,*

Orders.		
I.	MONÁNDRIA,	*One Stamen*
II.	DIÁNDRIA,	*Two Stamina*
III.	TRIÁNDRIA,	*Three Stamina, & so on, as in the first Thirteen Classes, to*
XIII.	POLYÁNDRIA,	*Twenty or more Stamina, as inserted on the Receptacle*

For here the Pistilla, Seed, or Seedvessel furnished no subdivisions, hence the necessity of having recourse to the NUMBER ALONE, *and* NUMBER *with* INSERTIONS *of the* STAMINA,

SECT. V. *Class* XIX SYNGENÉSIA *has its* ORDERS *taken from the* NATURE *of the* FLOWER, *and to understand this well it will be necessary to point it out by an* ANALYSIS.

FLOWERS

- *all the* FLORETS THE SAME (BISEXUAL.) — *Orders* I. — POLYGÁMIA ÆQUÁLIS (a)
- *Each* FLORET *having* NO PECULIAR CALYX — *Compound (Composed of* FLORETS *having* FIVE ANTHERS *Conniving)*
  - FLORETS DIVERSIFIED, (*some* BISEXUAL, *others* UNISEXUAL)
    - *Bisexual in the Disk,* PERFECT,
      - *Pistil-flowers in the Ray,* PERFECT — II. — POLYGÁMIA SUPÉRFLUA (b)
      - *Pistil-flowers in the Ray,* IMPERFECT — III. — POLYGÁMIA FRUSTRÁNEA (c)
    - *Bisexual in the Disk;* IMPERFECT *Florets in the Ray,* PERFECT — IV. — POLYGÁMIA NECESSÁRIA (d)
- *Each* FLORET *having* A PECULIAR CALYX.

NOT *Compound, but having the Character of the Class,* FIVE ANTHERS *conniving* — V. — MONOGÁMIA.

SECT. VI. *Classes,* XXI MONŒCIA. XXII DIŒCIA. *take their* ORDERS *from the* NUMBER, *and other* PECULIARITIES, *of the* STAMINA, *as explained in our Analysis of the Classes, thus*

Orders.		
I.	MONÁNDRIA,	*One Stamen.*
II.	DIÁNDRIA,	*Two Stamina, those Classes subdividing the preceeding Classes down to*
XIX.	GYNÁNDRIA (e)	*Stamina arising from the Pistillum.*
XX.	SYNGENÉSIA,	*5 Anthers united.*

For as we descend with the CLASSES, *they have the preeminence of those placed above them, and hence what would otherwise have been* CLASSES, *become* ORDERS, *with the Classical Appellation. This seeming and perplexing incongruity is Obviated in our* REFORMED SEXUAL SYSTEM, *for a full explanation of which, Vide our* PHILOSOPHY OF BOTANY.

SECT. VII. *thus in Class* XXIII. POLYGÁMIA *we have* ORDERS.

Orders.		
I.	MONŒCIA,	*One Habitation.*
II.	DIŒCIA,	*Two Habitations.*
III.	TRIŒCIA	*Three Habitations.*

SECT. VIII. *Class* XXIV CRYPTOGAMIA *has four* ORDERS.

Orders.		
I.	FILICES,	*Ferns.*
II.	MUSCI,	*Mosses.*
III.	ALGÆ,	*Sea-Weeds.*
IV.	FUNGI	*Funguses.*

NOTES.

(a) Equal Polygamy, (b) Superfluous Polygamy, both kinds of Florets bearing Seeds, (c) Disappointed Polygamy, the Florets in the Disk only producing Seed, (d) Necessary Polygamy, Florets in the Ray only producing Seed, (e) The reader may be startled at seeing GYNANDRIA, *an Order to* MONŒCIA, *or* DIŒCIA, *Sexes apart, but he should now be informed, that the number of Stamina is reckoned always from the filaments, barren Anthers, count for Nothing, and that barren Pistillas, also count for Nothing, thus then there is on separate Plants, a Female or Pistil bearing* CLUTIA, *without Stamina, and also another of the same kind Producing five Stamina, the Style here is very long, bearing the Stamina from the middle, but there is no Germen, hence it properly belongs to Class* XXII DIŒCIA. *order* GYNÁNDRIA.

Dr. Thornton *invent.*

London, Published by Dr. Thornton, January 3. 1807.

SYNTHESIS OF THE SEXUAL SYSTEM.

I. *Classes derived from the Consideration of the Number of Stamens.*

Class I. MONANDRIA ..... Order I. *Monogynia.* Order II. *Digynia.*

Class II. DIANDRIA ..... Order I. *Monogynia.* Order II. *Digynia.* Order III. *Trigynia.*

Class III. TRIANDRIA ..... Order I. *Monogynia.* Order II. *Digynia.* Order III. *Trigynia.*

Class IV. TETRANDRIA..... Order I. *Monogynia.* Order II. *Digynia.* Order III. *Tetragynia.*

Class V. PENTANDRIA....., Order I. *Monogynia.* Order II. *Digynia.* Order III. *Trigynia.* Order IV. *Tetragynia.* Order V. *Pentagynia.* Order VI. *Polygynia.*

Class VI. HEXANDRIA..... Order I. *Monogynia.* Order II. *Digynia.* Order III. *Trigynia.* Order IV. *Tetragynia.* Order V. *Polygynia.*

Class VII. HEPTANDRIA..... Order I. *Monogynia.* Order II. *Digynia.* Order III. *Tetragynia.* Order IV. *Heptagynia.*

Class VIII. OCTANDRIA ..... Order I. *Monogynia.* Order II. *Digynia.* Order III. *Trigynia.* Order IV. *Tetragynia.*

Class IX. ENNEANDRIA..... Order I. *Monogynia.* Order II. *Trigynia.* Order III. *Hexagynia.*

Class X. DECANDRIA ..... Order I. *Monogynia.* Order II. *Digynia.* Order III. *Trigynia.* Order IV. *Pentagynia.* Order V. *Decagynia.*

Class XI. DODECANDRIA..... Order I. *Monogynia.* Order II. *Digynia.* Order III. *Trigynia.* Order IV. *Pentagynia.* Order V. *Dodecagynia.*

II. *Classes derived from the Consideration of Number and Insertion.*

Class XII. ICOSANDRIA..... Order I. *Monogynia.* Order II. *Digynia.* Order III. *Trigynia.* Order IV. *Pentagynia.* Order V. *Polygynia.*

Class XIII. POLYANDRIA ..... Order I. *Monogynia.* Order II. *Digynia.* Order III. *Trigynia.* Order IV. *Tetragynia.* Order V. *Pentagynia.* Order VI. *Hexagynia.* Order VII. *Polygynia.*

III. *Classes derived from the Consideration of Number and Proportion.*

Class XIV. DIDYNAMIA..... Order I. *Gymnospermia.* Order II. *Angiospermia.*

Class XV. TETRADYNAMIA ..... Order I. *Siliculosa.* Order II. *Siliquosa.*

IV. *Classes derived from the Consideration of Union.*

Class XVI. MONADELPHIA ..... Order I. *Triandria.* Order II. *Pentandria.* Order III. *Octandria.* Order IV. *Enneandria.* Order V. *Decandria.* Order VI. *Endecandria.* Order VII. *Dodecandria.* Order VIII. *Polyandria.*

Class XVII. DIADELPHIA..... Order I. *Pentandria.* Order II. *Hexandria.* Order II. *Octandria.* Order IV. *Decandria.*

Class XVIII. POLYADELPHIA..... Order I. *Pentandria.* Order II. *Icosandria.* Order III. *Polyandria.*

Class XIX. GYNANDRIA ..... Order I. *Diandria.* Order II. *Triandria.* Order III. *Tetrandria.* Order IV. *Pentandria.* Order V. *Hexandria.* Order VI. *Decandria.* Order VII. *Dodecandria.* Order VIII. *Polyandria.*

Class XX. SYNGENESIA ..... Order I. *Polygamia æqualis.* Order II. *Polygamia superflua.* Order III. *Polygamia frustranea.* Order IV. *Polygamia necessaria.* Order V. *Polygamia segregata.* Order VI. *Monogamia.*

V. *Classes derived from the Consideration of Separation.*

Class XXI. MONŒCIA..... Order I. *Monandria.* Order II. *Diandria.* Order III. *Triandria.* Order IV. *Tetrandria.* Order V. *Pentandria.* Order VI. *Hexandria.* Order VII. *Heptandria.* Order VIII. *Polyandria.* Order IX. *Monadelphia.* Order X. *Syngenesia.* Order XI. *Gynandria.*

Class XXII. DIŒCIA..... Order I. *Monandria.* Order II. *Diandria.* Order III. *Triandria.* Order IV. *Tetrandria.* Order V. *Pentandria.* Order VI. *Hexandria.* Order VII. *Octandria.* Order VIII. *Enneandria.* Order IX. *Decandria.* Order X. *Dodecandria.* Order XI. *Polyandria.* Order XII. *Monadelphia.* Order XIII. *Syngenesia.* Order XIV. *Gynandria.*

Class XXIII. POLYGAMIA ..... Order I. *Monœcia.* Order II. *Diœcia.* Order III. *Triœcia.*

VI. *A Class derived from the Consideration of Concealment.*

Class XIV. CRYPTOGAMIA..... Order I. *Filices.* Order II. *Musci.* Order III. *Algæ.* Order IV. *Fungi.*

THE REFORMED SEXUAL SYSTEM.

CLASSES.

I.	Monandria	one Stamen.
II.	Diandria	two Stamina.
III.	Triandria	three Stamina.
IV.	Tetrandria	four Stamina.
V.	Pentandria	five Stamina.
VI.	Hexandria	six Stamina.
VII.	Heptandria	seven Stamina.
VIII.	Octandria	eight Stamina.
IX.	Enneandria	nine Stamina.
X.	Decandria	ten Stamina.
XI.	Dodecandria	twelve to nineteen Stamina.
XII.	Polyandria	twenty or more Stamina.
XIII.	Cryptogamia	concealed Stamina.

ORDERS.

I. *Orders taken from the Number of Pistilla.*

I.	*Monogynia*	one Pistillum.
II.	*Digynia*	two Pistilla.
III.	*Trigynia*	three Pistilla.
IV.	*Tetragynia*	four Pistilla.
V.	*Pentagynia*	five Pistilla.
VI.	*Hexagynia*	six Pistilla.
VII.	*Heptagynia*	seven Pistilla.
VIII.	*Octogynia*	eight Pistilla.
IX.	*Enneagynia*	nine Pistilla.
X.	*Decagynia*	ten Pistilla.
XI.	*Dodecagynia*	twelve to nineteen Pistilla.
XII.	*Polygynia*	twenty, or more Pistilla.

II. *Orders taken from some curious particularity in the Stamina.*

XIII.	*Didynamia*	four Stamina, two long, two short.
XIV.	*Tetradynamia*	six Stamina, four long, two short.
XV.	*Icosandria*	twenty, or more Stamina, inserted on the Calyx or Corolla.
XVI.	*Monadelphia*	filaments united in one body.
XVII.	*Diadelphia*	filaments united, forming two bodies.
XVIII.	*Polyadelphia*	filaments united, forming three or more bodies.
XIX.	*Syngenesia*	five anthers united.
XX.	*Gynandria*	Stamina arising from the Pistil.
XXI.	*Monœcia*	Stamina apart from the Pistil on the same plant.
XXII.	*Diœcia*	Stamina apart from the Pistil on different plants.
XXIII.	*Polygamia*	bisexual flowers, and unisexual.

Class Cryptogamia has the natural orders, I. *Filices.* II. *Musci.* III. *Algæ.* IV. *Fungi.*

REMARKS.

I. The Class IV. Tetrandria, being a numerous one, Linnæus chose to separate it into two, and an opportunity presented itself from the consideration of the differences which occur in plants having four stamina, from the *proportion* of these. Didynamia expresses this difference; and the flowers are either *ringent* or *personate*, a *natural tribe*. But as all the *ringent* flowers are not included in the class Didynamia, some coming under Class II. Diandria, there can be no good reason for not making this real division of a class into *an Order*. The System hence becomes more *easy* and *regular*, and in fact *frequently, more natural.*

II. The Class VI. Hexandria, also readily separates into two parts, from the like consideration of the *proportion* in the stamina, and Tetradynamia contains the *natural tribe* of *cruciform* plants.

III. The Class XIII. Polyandria, also readily divides into two parts, from the consideration of the *insertion* of the stamina, and one of these, the Icosandria, of Linnæus, possesses *many edible fruits*, but as it is not altogether a *natural class*, therefore no one can regret seeing this part distinguished as an *order*.

IV. In the Monadelphia of Linnæus, many of the numerical names, which had been used to characterize the Classes, are employed to distinguish the Orders, or subdivisions, as *Pentandria, Decandria,* &c. and hence arises a confusion unavoidably perplexing to the young student, and which our Method, as is evident, completely removes. The same observation applies to the Classes *Diadelphia, Polyadelphia, Gynandria, Monœcia, Diœcia,* where the same (may I call it so) impropriety occurs. This class in Linnæus is *not natural*, but being made into orders, many of them then become *natural* as *orders*, as the Columniferæ.

V. The *Papilionaceous Flowers*, as they are generally termed, form the Order *Decandria* in the Class Diadelphia of Linnæus; but the author, unwilling, as it would seem, to make any breach in so natural an assemblage of plants, has so far deviated from the principles of his System, as to refer to that Class several genera, which strictly belong to the preceding Class, being in fact *Monadelphious*. This inconvenience is entirely obviated in the present scheme, where *Monadelphia* and *Diadelphia* constitute two successive Orders in our Class X. *Decandria.*

VI. Polyadelphia is a small, and, as Doctor Smith observes, "*rather an unnatural class.*" Most persons are shocked to see Citrus, the orange, in this class, and not in the *Icosandria* class; for Linnæus describes it of the Class XVIII. Polyadelphia, Order III. *Icosandria.* Now in our *Reformed Sexual System*, it comes under Class XIII. Polyandria, Order *Icosandria*, in juxta-position with other edible fruits, in the subdivision Polyadelphia.

VII. Class V. Pentandria, a very numerous class, is subdivided by Syngenesia, and so formed into two classes by Linnæus, the latter of which, however, as containing an order *Monogamia*, is not therefore altogether a *natural class.* We obviate this by making *Syngenesia* an order, and the subdivision *Polygamia* to contain the natural tribe of *compound flowers*; whilst, under another subdivision, *Monogamia*, many plants, not having compound flowers, arrange themselves.

VIII. Against Gynandria, which Doctor Smith calls, "an odd and miscellaneous class," there lies the same objection, as we observed above, as against the Class Diadelphia, the numerical names of Classes being applied to Orders. In our scheme, Class II. Diandria, has an Order *Gynandria*, which contains the *natural tribe* of Orchises; and thus the mind is delighted to see a *natural assemblage* embraced in an order, if not in a class. The separation of the remainder cannot be regretted, as not possessing amongst each other the smallest affinity.

IX. Monœcia is a miscellaneous class, and borrows the names of its secondary divisions from most of the other classes, as *Monandria, Diandria,* &c. nay even from *Monadelphia, Syngenesia*, and *Gynandria*; for all these become, in Linnæus's *Sexual System*, Orders. In our scheme, Class Triandria, Order *Monœcia*, contains mostly grasses, hence we retain this *natural assemblage* in the same class *at least*, if not in the same order.

X. Diœcia. The same remarks apply here, as in Monœcia.

XI. Polygamia subdivides the classes *Monœcia* and *Diœcia*; therefore in the logic of science it is in reality an order.

APOLOGY.

PASCITUR IN VIVIS LIVOR, POST FATA QUIESCIT
TUM SUIS EX MERITIS CUIQUE TUETUR HONOS.

SOME apology is certainly necessary, after any endeavour to reform so celebrated and established a System, as the Sexual System of the illustrious LINNÆUS. Many alterations in this system have been attempted. The enlightened pupil of Linnæus, THUNBERG, abolished the classes XX. *Gynandria*, XXI. *Monœcia*, XXII. *Diœcia*, and XXIII. *Polygamia*. GMELIN, Professor at Gottingen, to the alterations introduced by Thunberg, in publishing a new edition of Linnæus's Systema Naturæ, added the abolition of Class XII. *Icosandria*; and the no less celebrated Dr. SMITH, preserving the rest of the System entire, has abolished Order V. *Monogamia* in Class IX. *Syngenesia*, and Class XIII. *Polygamia*. "To his Class Polygamia," says Dr. Smith, "many students of tropical plants *justly* objected in his lifetime, and he, as well as his son, listened to their observations." Dr. WITHERING, in his Arrangement of British Plants, has followed the system of Gmelin. Professor MARTYN, speaking of the changes introduced by SCHREBER, in his new edition of Linnæus's Genera Plantarum, says, that his reduction of Class XX. *Gynandria*, appears "*reasonable*," yet the singularity of the Order *Diandria* surely demanded a separate place to itself. But when he comes to mention the incorporation by GMELIN of the Class *Icosandria* into the *Polyandria*, he declares this change to be "*abominable*."

I am aware, that venturing to reform in such a degree the Sexual System, as I have done, will bring upon me, with some, much severe reproach. I am conscious, indeed, as well as others, that the credit of the *Sexual System* of Linnæus, as an *invention*, surpasses all power of praise, and hence has found enthusiastic admirers; and with timid hands I have ventured to take to pieces the *superstructure* he raised, and build up from the *old materials*, which I have *carefully* and *religiously* preserved, a NEW EDIFICE, suited to modern improvement and convenience; hoping, however, that those who may, hereafter, publish the works of Linnæus, will edite the Sexual System as delivered by himself, and not bring forward, in the works said to be those of Linnæus, what he never either thought or wrote. For a full defence of the *Reformed Sexual System* vide my "Practical Botany, being a New Illustration of the Genera of Plants, with dissections of each Genus," where this subject has been particularly considered and discussed.

In a word, as by system is only meant a plan to *facilitate* the acquirement of the knowledge of plants, the more easy this is contrived to accomplish the proposed end, the better such a system will be accounted; and I have endeavoured so to contrive this, that I hope no longer any very great obstacles can arise in the way of the student, and that this will plead my excuse with a discerning and indulgent public for venturing to step out of the beaten path, to attempt the *reformation* of a system which has conferred immortal honour upon the inventor, and received the general plaudits and admiration of the learned throughout Europe. It appeared to me more advisable to *reform* the whole, than to make any *partial amendments*; either to adopt the system as delivered to us by Linnæus, or to have the present system, as erected out of the materials of the old; a *system* which I hope may not moulder, like the other systems,* into the sand of which they were composed, but resemble the youthful PHŒNIX arising from the ashes of its parent, or as a rock in the midst of the ocean, may remain until "the wreck of matter and the crush of worlds."

It is certainly a great satisfaction for me to find, that although the learned and venerable Professor MARTYN has long openly disapproved of the changes made in the Sexual System by the several Reformers, yet he writes to me—

EXTRACT OF A LETTER TO DR. THORNTON, FROM THE REV. MR MARTYN.

"I by no means *disapprove* of *your new* attempt to render the Sexual System, by the manner in which you have done it, an *easier medium* of attaining *a knowledge of Plants*; and have been long convinced in my own mind, that we strive in vain to unite a *natural* with an *artificial arrangement*. Upon *your plan*, I see *no impropriety* in bringing the ORCHIDEÆ into the *Second Class*; nor can I even *object* to your *altering*, as you have done, the separated classes of Linnæus, ICOSANDRIA and POLYANDRIA. Your *method* is ably considered throughout; for along with *you* I hold our great Master's System as *sacred*, and can never approve of those *greater alterations*" (he might have said *mutilations*) "which some of his pupils have made, so differently is to be estimated the conduct of persons engaged in the same object."

The Rev. Doctor MILNE, the learned author of "*A Botanical Dictionary*," writes to me—

EXTRACT OF A LETTER TO DR. THORNTON, FROM THE REV. DR COLIN MILNE.

"Your *Reformed Scheme* of the *Linnæan System* has my *entire approbation*. It possesses all the admirable and elegant simplicity of that of RIVINUS, which has always been a great favourite with me, from the steady adherence of the author to the Principles of his Method, and is eminently adapted for *practice*. Your remarks respecting the *Sexual System* are truly excellent; your *New Illustration* admirable."

Doctor SHAW, of the British Museum, a gentleman not less eminent as a botanist, than a naturalist, declares, "that he believes, had LINNÆUS been alive, the *Reformed Sexual System* would be that which he himself would have instantly adopted."

Similar are the flattering opinions also of several other *distinguished botanists*, who have expressed their approval of the *Reformed Sexual System*. But with extreme diffidence I ſubmit it to the judgment of the world.

---

* Not less than fifty-two systems of Botany have been published, several of them of very considerable merit, but not *practically* good, hence most of them are now forgotten.

PART

THIRD.

With Flowers the Graces bind their golden hair,
And Flowery Wreaths consenting Lovers wear.
Flowers, the *sole luxury* which nature knew
In Eden's pure and guiltless Garden grew.
To loftier forms are rougher tasks assign'd;
The sheltering *Oak* resists the stormy wind,
The tougher *Yew* repels th' invading foe,
And the tall *Pines* for future navies grow;
But this soft family, to cares unknown,
Were born for *pleasure* and *delight* alone,
Gay without *toil*, and *lovely* without *art*,
They spring to cheer *the sense and* glad *the heart*.

Barbauld.

Picturesque

BOTANICAL

PLATES

Of the New Illustration of the

Sexual System

OF

Linnæus:

By

Robert John Thornton, M.D.

LONDON

Printed for the Publisher;

JANUARY the 1st. MDCCXCIX.

Tomkins Scripsit. *Vincent Sculpsit.*

Burney pinx.

Tomkins Engraver to her Majesty &c.

THE *Temple of Flora,*

OR

GARDEN

OF

Nature,

By Bonnycastle.

Tomkins ſcrip.

Vincent ſculp.

PICTURESQUE

BOTANICAL PLATES,

ILLUSTRATIVE

OF THE

SEXUAL SYSTEM

OF

CAROLUS VON LINNÆUS.

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XXXI. Blue Egyptian Water Lily.

These Plates

are most Humbly Inscribed

TO

Her Gracious Majesty

THE

Bright Example

OF

Conjugal Fidelity

AND

Maternal Tenderness

OF

Patroness

OF

BOTANY

AND OF THE

Fine Arts.

ANNO DOMINI MDCCXCIX.

TOMKINS *fec.*

VINCENT *fcu.*

To

HER

MAJESTY'S

Most obedient

And devoted Servant

Robert John Thornton

M.D

Tomkins Scriptit

COOPER,

SCULPT

SELECT

Plants.

Tomkins fec. Vincent feu.

Cosway R.A. pinx.

T. Woolnoth sculp.

Flora dispensing Her Favours on the Earth.

EXPLANATION OF THE PICTURESQUE PLATES.

Milton has given us a fine description of the most perfect garden.

> .....Through EDEN went a river large,
> Nor chang'd his course, but through the shaggy hill
> Pass'd underneath ingulph'd, for GOD had thrown
> That mountain as this garden mound, high rais'd
> Upon the rapid current.....
> .....from that sapphire fount the crisped brooks
> Rolling on orient pearl, and sands of gold,
> With mazy error under pendent shades,
> Ran fruitfulness, visiting each plant,
> *Flowers* worthy of PARADISE, which not *nice art*
> In *beds* and *curious knots*, but Nature's boon
> Pour'd forth profuse on hill, and dale, and plain,
> Both where the morning sun first warmly smote
> The open field, and where the unpierc'd shade
> Imbrown'd the noon-tide bow'rs.—*Thus was this place*
> *A happy seat of various view*.....

So in our PICTURESQUE BOTANICAL PLATES the reader must not expect to see yew trees cut into various forms, long avenues of upright timber, gravel-walks meeting to some circular bason of water, or a cascade playing its forced part, statues stationed at the four corners of a smooth carpet of turf, labyrinths, boats on the water fashioned like a swan, cards to keep the calyxes from bursting, upright sticks, and regular disposition, that place where LEISURE

"In *trim garden* takes his *pleasure*."

But each scenery is appropriated to the subject. Thus in the *night-blowing* CEREUS you have the moon playing on the dimpled water, and the turret-clock points XII, the hour at night when this flower is in its full expanse. In the *large-flowering* MIMOSA, first discovered on the mountains of Jamaica, you have the humming birds of that country, and one of the aborigines struck with astonishment at the peculiarities of the plant. In the *Canada* LILY there is expressed the shade it delights in, with a sky whose clouds yet contain snow within their bosom. In the *narrow-leaved* KALMIA, which comes forth under the same zone, but at an earlier season, the mountains are still covered with their fleecy mantle. The *nodding* RENEALMIA, on the contrary, has a warm sky, and cocoa-nut trees skirt the distant scenery. The AURICULA is represented as flourishing on Alpine mountains, when the utility of their banner becomes conspicuous. In the DODECATHEON, or *American* COWSLIP, a sea view is given, and a vessel bearing a flag of that country: the same is shewn by a butterfly in the plates of the *oblique-leaved* BEGONIA; and the *Pontic* RHODODENDRON. In the *Chinese* LIMODORON, and the *Indian* CANNA, are represented the pagodas of the East. The TULIPS and HYACINTHS are placed in Holland, where these flowers are particularly cultivated, embellishing a level country. The ALOE erects, in contrast, its stately form among mountains, and the height and shape of the whole plant may be seen in the back-ground. In the *maggot-bearing* STAPELIA you will find represented a green African snake, and a blow-fly in the act of depositing her eggs in the flower, with the maggots produced from this cause. The clouds are disturbed, and every thing looks wild and sombre about the *dragon* ARUM, a plant equally poisonous as fœtid. In the *white* LILY, where a dark back-ground was obliged to be introduced to relieve the flower, there is a break, presenting to the view a temple, the only kind of architecture that can be admitted in a garden. Hence the several species of PASSION-FLOWERS are seen clambering up pillars, reaching to different heights. As each of these beauties of the vegetable race are carefully dissected, it is hoped, that the rigid botanist will excuse the author, who, striving at universal approbation, has thus endeavoured to unite the

"Utile Dulci."

HOR.

Caldwall. sculp.

Hesperia, Flora, Ceres and Cupid honouring the Bust of Linnæus.

FLORA, ÆSCULAPIUS, CERES, WITH CUPID, HONOURING THE BUST OF LINNÆUS.

THE introduction of FLORA, CERES, and ÆSCULAPIUS, is emblematic of the advantages derived from the study of the science of Botany, as in the works of Linnæus, to *physic*, *agriculture*, and as an *elegant pursuit* for Ladies. CUPID is represented in allusion to the *sexual system*, invented by LINNÆUS. The ZEPHYR above denotes *Spring*, the season most favourable to the study of Botany. The fair forms of FLORA and of CUPID, with the bust of LINNÆUS, cannot fail to disclose to the eye of the observer the magic pencil of a RUSSEL; and the figures of ÆSCULAPIUS and CERES, the nervous and masterly strokes of an OPIE.

I.

SACRED to great LINNÆUS' honour'd name,
A laurel grove perpetuates his fame,
Where deck'd in honest pride by Sculpture's hand,
See *rival* NATIONS* bid his image stand,
The foremost of the human race to rise,
Nor servile flattery this, or base disguise.
Crowds, now retiring, leave the hallow'd place,
When Sol's bright car has run its daily race,
And gold-fring'd pearly clouds dissolve away,
And evening veils the glaring face of day.
Then, first, the sprightly, subtle boy,
Beauty's offspring, winged LOVE,
Bounding on in wanton joy,
Springs forward to the laurel grove,
And grateful traces on the stone
In golden lines his tribute gay †,
Proud thus indelibly to own
The triumphs of his tender sway.

---

* In allusion to the bust of LINNÆUS, which was first raised in the botanic garden of Edinburgh by the botanical Professor.

LINNÆO POSUIT J. HOPE.

as was also done in the year 1790, in the botanic garden at Paris, by a decree of the National Assembly.

† The lines which Cupid writes on the pedestal are as follow:

All *animated* Nature owns my sway,
Earth, sea, and air, my potent laws obey,
And thou, divine LINNÆUS, trac'd my reign
O'er trees, and shrubs, and FLORA's beauteous train,
Proved them obedient to my soft controul,
And gaily breathe an aromatic soul.

CHARLOTTE LENOX.

This lady was invited by the late illustrious Dr. Samuel Johnson, to meet all his literary acquaintances. After dinner, the Doctor gave, "To the Muses," and as one of them, he publickly crowned this celebrated authoress with *bays*. Vide Life of Johnson prefixed to his stupendous Dictionary.

II.

Light fantastic, and elegantly free,
Next FLORA, blue-ey'd goddess, jocund, see,
In snow-white vesture, half-pellucid, drest,
Through whose thin folds, by Zephyrus carest,
A form celestial presses to the sight
In graceful symmetry. As Venus bright
She moves, that lively goddess of desire!
But looks the vestal maid to check the fire,
And breathes the rapturous delight of sense,
And smiles with beaming grace of innocence.
She weaves her varied wreath
In artless, sweet simplicity,
While every flower her feet beneath
Springs upward to felicity,
Happy if pluck'd by Flora's hand,
Their several tints, by skill when wrought,
Of sweets will form a blooming band;
A garland to the sage she brought.

III.

Then nut-brown CERES, as she walks along,
Trilling in rustic phrase her ev'ning song,
When from the plenteous harvest she returns,
Bearing the yellow wealth which labour earns,
Quick from the summit of the hill she spies
The honour'd bust, and soon a wreath she ties,
A golden chaplet, choice reward of heaven!
Unfading crown, to mortals rarely given,
And hastes away to join the lovely pair,
And pay with gratitude her homage there.
By the sparkling of her eye,
Of the darkest hazel hue;
By her forehead arched high,
And tawny freckles not a few,
The village maid is clearly seen,
Flush'd in ruddy glow of health,
Beauteous goddess of the plain,
Fruitful source of all our wealth.

Last

IV.

Last, reverend age with sober step appears,
And perfect praise to great LINNÆUS rears;
For lo! where sapient ÆSCULAPIUS nigh
Lifts with delight the warm enraptur'd eye,
And owns the debt his science owes to thee,
Great Northern Genius, Sire of Botany!
The knotty staff, the twining serpent, tell
Apollo's favour'd son, denoting well
The difficulties, and the cunning art
Requir'd to parry Death's envenom'd dart.
Thus hoary WISDOM * here combines
With BEAUTY †, USEFULNESS ‡, and LOVE §,
And each their proper homage joins,
Unrivall'd SWEDE! thy worth to prove.
Thus manly ADMIRATION stands,
And CUPID writes immortal fame,
While FEMALES use with lavish hands
Their flowers in honour of thy name.

SAMUEL HULL WILCOCK.

---

* Æsculapius. † Flora. ‡ Ceres. § Cupid.

London, Published by D.r Thornton, June 1.st 1805.

Reinagle Scn.t A.R.A. pinx.t — *Burke sculp.t*

And thou, divine LINNÆUS! *traci'd my Reign,*
O'er Trees, and Plants, and Flora's bounteous Train,
Prov'd them obedient to my soft Controul;

CUPID

INSPIRING PLANTS WITH LOVE.

THE sexes of Plants had been suggested by GREW and Sir THOMAS MILLINGTON, and this doctrine was more advanced by VAILLANT, but wanted confirmation by experiments, which made the Imperial Academy of Petersburgh offer an handsome premium for proofs of this doctrine, and occasioned LINNÆUS to write a dissertation on this subject, which gained for him the honourable award.

Teeming with Nature's lively hues,
I bid thee welcome, genial SPRING!
While fancy wakes her thousand lyres,
And woods and vales responsive sing.

SHE comes; lo! WINTER scowls away;
Harmonious forms start forth to view,
Nymphs tripping light in circles gay,
Deck'd in their robes of virgin hue.

Then I, on am'rous sportings bent,
Like a sly archer take my stand;
Wide through the world my shafts are sent;
And ev'ry creature owns my hand.

First man, the lord of all below,
A captive sinks beneath my dart;
And lovely woman, made to glow,
Yields the dominion of her heart.

Through sea and earth and boundless sky,
The fond subjection *all* must prove,
Whether they swim the stream or fly,
Mountain or vale or forest rove.

Nor less the *Garden*'s sweet domain,
The mossy heath and verdant mead,
The tow'ring hill, the level plain,
And fields with *blooming life* o'erspread.

GEORGE DYER.

PROEM.

THE CARD

OF

INVITATION.

Odi profanum Vulgus, et arceo.

HORACE.

O, COME NOT HERE, YE proud, whose breasts infold
Th' insatiate wish of *glory*, or of *gold*;
O COME NOT YE, whose wrinkled foreheads wear
Th' eternal frown of *envy*, or of *care*;
For YOU no DRYAD decks her fragrant bowers,
For YOU her sparkling urn no NAIAD pours;
Unmark'd by YOU light GRACES skim the green,
And hov'ring CUPIDS aim their shafts *unseen*.—

But THOU, whose *Mind* the well-attemper'd ray
Of *taste*, and *virtue*, lights with *purer day*,
Whose *finer Sense* each soft vibration owns,
With sweet responsive sympathy of tones;
For THEE sweet *Cereus* and *Renealmias* glow,
And other *plants* their *curious structure* shew;
For THEE MY *Vallies* nurse the varied *Wreath*;
MY *Rivers* murmur, and MY *Zephyrs* breathe;
MY painted *Birds* their vivid plumes unfold,
And *Insects* wave their little wings of gold.—
So the FAIR FLOWER expands her lucid form
To *meet* the *Sun*, and *shuts* it to the *Storm*.

SEWARD.

Pether pinx^t — *W Ward Engraver to H.R.H. the Duke of York*

The Snowdrop.

A GROUP OF HYACINTHS.

In viewing with attention the works of Nature, we cannot fail to notice the highest degree of perfection and harmony of parts. In the animal creation, when the morning is but dawning, we have first the plaintive matin of the robin; as the sun becomes nearer the horizon, the wakeful lark, on vibrating wing, gives his cheerful song; the sun once fully risen, and all the warblers of the forest unite in the vocal concert; after a pause, the sun declining, the nightingale joins the robin, but with a song in a much more plaintive strain, and she finally ends in a solo;[a] and when utter darkness closes the scene, the frog croaks, the owl screeches, and all partakes of the solemnity of night. An African scene at this late hour is dreadful indeed! Besides the hissing of serpents, there are the continual barkings of the wolf and jackall, the yell of the tyger, hyæna, and panther, and the roaring of the lion, appalling every heart with fear.

EXTRACT FROM THE CALENDAR OF FLORA.

January 26. The Snow-Drop (*Galanthus nivalis*) flowers.

With the same judicious harmonizing of parts, the first flower that appears on the verge of winter is the *Snow-Drop*, of a pale white, with a little green in the three central petals, whose form the poetess thus elegantly depicts.

Poets still, in graceful numbers,
  May the glowing Roses choose;
But the *Snow-Drop's* simple beauty
  Better suits an humble muse.

Earliest bud that decks the garden,
  Fairest of the fragrant race,
First-born child of vernal Flora,
  Seeking mild, thy lowly place.

---

[a] The plaintive song of Philomela is thus beautifully described by Virgil. Orpheus laments the loss of Eurydice for *seven whole months*.

. . . . . .
The rocks were mov'd with pity to his moans,
Trees bent their heads to hear him sing his wrongs,
Fierce tygers couch'd around, and loll'd their fawning tongues.
So, close in poplar shades, her children gone,
The mother Nightingale laments *alone*;
Whose nest some prying boy had found, and thence
By stealth convey'd th' unfeather'd innocence.
Thus she supplies the night with mournful strains,
And *melancholy music* fills the plains.

Though no warm, or murmuring zephyr,
Fan thy leaves with balmy wing:
Pleas'd, we hail thee, spotless blossom,
Herald of the infant Spring.

Through the cold, and cheerless season,
Soft thy tender form expands,
Safe in unaspiring graces,
Foremost of the bloomy bands.

White-rob'd flow'r, in lonely beauty,
Rising from a wintry bed;
Chilling winds, and blasts ungenial,
Rudely threat'ning round thy head.

Silv'ry bud, thy pensile foliage,
Seems the angry blaſt to fear;
Yet secure, thy tender texture
Ornaments the rising year.

No warm tints, or vivid colouring,
Paints thy bells with gaudy pride;
Mildly charm'd, we seek thy fragrance
Where no thorns insidious hide.

'Tis not thine, with flaunting beauty,
To attract the roving sight;
Nature, from her varied wardrobe,
Chose thy vest of purest white.

White, as falls the fleecy shower,
Thy soft form in sweetness grows;
Not more fair the valley's treasure,
Nor more sweet, her Lily blows.

Drooping harbinger of Flora,
Simply are thy blossoms drest;
Artless, as the gentle virtues,
Mansion'd in the blameless breast.

CORDELIA SKEELES.

JANUARY 28, the CROCUS *(Crocus vernus)* flowers.

The SPIRNG CROCUS *(Crocus vernus)* in its wild state in Switzerland is not yellow, but white, with a purple base, according to Haller. In England it is of a pale purple colour.

Like the Snow-Drop, it is first protected by a sheath, or spatha, and lies near the ground. Its transmutation from a human form is mentioned by Ovid in the fourth book of his Metamorphoses.

Its congener, the AUTUMNAL CROCUS *(Crocus Autumnalis)* is also of a purple colour, as best suited to this season of the year; nor does it blow till most plants begin to fade, and run to seed.

Say, what impells, amidst surrounding snow
Congeal'd, the CROCUS' yellow bud to blow?
Say, what retards, amidst the summer blaze,
Th' AUTUMNAL BULB, till pale, declining days?—
The GOD OF SEASONS, whose pervading power
Controls the sun, or sheds the fleecy shower,
He bids each Flower HIS quickn'ing word obey,
Or to each lingering bloom enjoins delay.

WHITE.

FEBRUARY 1, the WINTER HELLEBORE *(Helleborus hiemalis)* flowers.

Nature assumes now a more towering aspect, but still there is the same delicate white as in the preceding month, and the WINTER HELLEBORE presents us with flowers that have five broad white petals, which afterwards turn to a dull green.

As yon gay clouds, which canopy the skies,
Change their thin forms, and lose their lucid dyes,
So the soft bloom of beauty's early charms
Fades in our eyes, and withers in our arms.
Bright as the silvery plume, or pearly shell,
The fairest rose, or lily's virgin bell,
The snowy HELLEBORE attractive shone;
Pleas'd every sage, and every shepherd won:
Round the gay *sisters* press the enamour'd *bands,*
And seek with soft solicitude their hands.—
Ere while how chang'd!—in dim suffusion lies
The glance divine, that lighten'd in their eyes;
Cold are those lips, where smiles seductive hung,
And the weak accents linger on their tongue.—
As each fair feature turns to livid green,
Disgust with face averted shuts the scene.

DARWIN.

This beautiful Evergreen, a native of our happy island, and of the other parts of Europe, resembling the palm-tree in miniature, early puts forth its flowers, and as if by intention, these are of a pale dull green, to give more dignity to its leaves and berries, destined to crown the brow of the warrior victorious in his country's cause, or the poet, who chants these victories, or sings the attributes of Plants.

The earliest of Apollo's loves was she,
Whom not blind Fortune, but the dire decree
Of angry Cupid, forc'd him to desire:
Daphne her name, and Peneus was her sire.
Swell'd with the pride, that new success attends,
He sees the stripling, while his bow he bends,
And thus insults him: " Thou lascivious Boy,
" Are arms like these for children to employ?
" Know, such atchievements are my proper claim;
" Due to my vigour, and unerring aim:
" Resistless are my shafts, and Python late,
" In such a feather'd death, has found his fate.
" Take up the torch, and lay my weapons by."
\- - - - - - - - - - - - - -
To whom the son of Venus thus replied.
" Phœbus, thy shafts are sure on all beside,
" But mine on Phœbus, mine the fame shall be
" On all thy conquests, when I conquer thee."
He said, and soaring, swiftly wing'd his flight;
Nor stopt but on Parnassus' airy height.
Two diff'rent shafts he from his quiver draws;
One to repel desire, and one to cause.
One shaft is pointed with refulgent gold,
To bribe the love, and make the lover bold;
One blunt, and tipt with lead, whose base allay
Provokes disdain, and drives desire away.
The blunted bolt against the Nymph he drest;
But with the sharp transfixt Apollo's breast.
Th' enamour'd Deity pursues the chace;
The scornful damsel shuns his loath'd embrace;
In hunting beasts of prey her youth employs;
And Phœbus rivals in her rural joys.
With naked neck she goes, and shoulders bare;
And with a fillet binds her flowing hair.
By many suitors sought, she mocks their pains,
And still her vow'd virginity maintains.
Impatient of a yoke, the name of bride
She shuns, and hates the joys she never tried.
On wilds, and woods, she fixes her desire:
Nor knows what youth, and kindly love, inspire.

Her father chides her oft: " Thou ow'st," says he,
" A husband to thyself, a son to me."
She, like a crime, abhors the nuptial bed:
She glows with blushes, and she hangs her head.
Then casting round his neck her tender arms,
Sooths him with blandishments, and filial charms.
" Give me, my lord," she said, " to live, and die,
" A spotless maid, without the marriage tie.
" 'Tis but a small request; I beg no more
" Than what Diana's father gave before."
The good old sire was soften'd to consent,
But said her wish would prove her punishment;
For so much youth, and so much beauty join'd,
Oppos'd the state, which her desires design'd.
The God of Light, aspiring to her bed,
Hopes what he seeks, with flattering fancies fed;
And as in empty fields the stubble burns,
Or nightly travellers, when day returns,
Their useless torches on dry hedges throw,
That catch the flames, and kindle all the row;
So burns the god, consuming in desire,
And feeding in his breast a fruitless fire.
Her well-turn'd neck he view'd (her neck was bare),
And on her shoulders her dishevel'd hair;
" Oh were it deck'd," said he, " with what a grace
" Would every waving curl become her face!"
He view'd her eyes, like heav'nly lamps that shone,
He view'd her lips, too sweet to view alone,
Her taper fingers, and her panting breast;
He praises all he sees, and for the rest
Believes - - - - - - - - - -
Swift as the wind, the damsel fled away,
Nor did for these alluring speeches stay.
" Stay, Nymph," he cried, " I follow, not a foe.
" Thus from the lion trips the trembling doe;
" Thus from the wolf the frighten'd lamb removes,
" And, from pursuing falcons, fearful doves.
" Thou shun'st a god, and shun'st a god that loves.
" Ah, lest some thorn should pierce thy tender foot,
" Or thou shouldst fall in flying my pursuit!
" To sharp uneven ways thy steps decline;
" Abate thy speed, and I will bate of mine.
" Yet think from whom thou dost so rashly fly;
" Not basely born, nor shepherd's swain am I.
" Perhaps thou know'st not my superior state;
" And from that ignorance proceeds thy hate.
" Me Claros, Delphi, Tenedos, obey;
" These hands the Patareian sceptre sway.

" The King of Gods my father: what shall be,
" Or is, or ever was, in fate, I see.
" Mine is th' invention of the charming lyre;
" Sweet notes, and heav'nly numbers, I inspire.
" Sure is my bow, unerring is my dart;
" But, ah! more deadly his, who pierc'd my heart.
" Med'cine is mine; what herbs and simples grow
" In fields and forests, all their pow'rs I know;
" And am the great physician call'd, below.
" Alas that fields and forests can afford
" No remedies to heal their love-sick lord!
" To cure the pains of love no plant avails;
" And his own physic, the physician fails."
She heard not half, so furiously she flies;
And on her ear th' imperfect accent dies.
Fear gave her wings; and as she fled, the wind
Increasing, spread her flowing hair behind;
And left her legs and thighs expos'd to view:
Which made the God more eager to pursue.
The God was young, and was too hotly bent
To lose his time in empty compliment:
But led by love, and fir'd with such a sight,
Impetuously pursu'd his near delight.
As when th' impatient greyhound slipt from far,
Bounds o'er the glebe to course the fearful hare,
She in her speed does all her safety lay;
And he with double speed pursues the prey;
She 'scapes, and for the neighb'ring covert strives,
And, gaining shelter, doubts if yet she lives.
If little things with great we may compare,
Such was the God, and such the flying Fair;
She, urg'd by fear, her feet did swiftly move,
But he more swiftly, who was urg'd by love.
He gathers ground upon her in the chace:
Now breathes upon her hair, with nearer pace;
And just is fast'ning on the wish'd embrace.
The Nymph grew pale, and in a mortal fright,
Tir'd with the labonr of so long a flight,
And now despairing, cast a mournful look
Upon the streams of her paternal brook:
" O help," she cried, " in this extremest need!
" If water gods are deities indeed:
" Gape earth, and this unhappy wretch intomb;
" Or change my form, whence all my sorrows come."
Scarce had she finish'd, when her feet she found
Benumb'd with cold, and fasten'd to the ground:
A filmy rind about her body grows;
Her hair to leaves, her arms extend to boughs:

The Nymph is all into a *Laurel* gone;
The smoothness of her skin remains alone.
Yet PHŒBUS loves her still, and casting round
Her bole his arms, some little warmth he found.
The tree still panted in th' unfinish'd part;
Not wholly vegetive, and heav'd her heart.
He fixt his lips upon the trembling rind;
It swerv'd aside, and his embrace declin'd.
To whom the God, "*Because thou canst not be*
"*My Mistress, I espouse thee for my Tree:*
"*Be thou the prize of honour and renown,*
"*The deathless Poet, and the Poem, crown.*
"*Thou shalt the Roman feſtivals adorn,*
"*And, after Poets, be by Victors worn.*
"*Thou shalt returning Cæsar's triumph grace;*
"*When pomps shall in a long procession pass.*
"*Wreath'd on the posts before his palace wait;*
"*And be the sacred guardian of the gate.*
"*Secure from thunder, and unharm'd by Jove,*
"*Unfading as th' immortal pow'rs above:*
"*And as the locks of* PHŒBUS *are unshorn,*
"*So shall perpetual green thy boughs adorn.*".
The grateful Tree was pleas'd with what he said,
And shook the shady honours of her head.

OVID.

MARCH 15, the SWEET VIOLET *(Viola odorata)*, flowers.

The VIOLET, although blue, yet partakes of the *sombre*, suited to the season; and this kind is of one uniform colour, without any markings; hence her metamorphosis is thus poetically depicted.

This flower, so fame reports, was once a maid,
Her name IANTHIS, of DIANA's train,
The sweetest Nymph that ever trod the plain,
Whom, while Pheræan flocks the Virgin fed,
APOLLO saw, and courted to his bed;
But sued in vain; the timid Virgin fled
To woods herself, and her complaints she bore,
And sought *Protection* from DIANA's pow'r,
Who thus advis'd—" Be sure from mountains fly,
" PHŒBUS loves mountains, and an open sky."
To vales and shady springs she fled amain,
Beneath dark thickets sought to hide in vain;
PHŒBUS her virtue and her flight admir'd,
The more the Virgin fled, the more the God was fir'd.
To DIANA did the Nymph again repair,
When DELIA thus—" Since Beauty's such a snare,

" Ah! rather *perish* that *destructive Grace!*"
And straight with *dusky blue* she stain'd her face.
Discolour'd thus, an humbler state she prov'd,
Not now so fair, yet still by DELIA lov'd.
Chang'd to a VIOLET, with this praise she meets,
Persisting chaste, she keeps her former sweets.

RAPINE.

Another species of VIOLET, the *tricolor*, has the markings, like the Greek name of the renowned warrior AJAX; hence the origin to the poetic fancy of the metamorphosis of that great Hero to this flower.

AJAX, being disappointed of the armour of Achilles, decreed to Ulysses, destroys himself. His death is related thus.

He who could often, and alone, withstand
The foe, the fire, and Jove's own partial hand,
Now cannot his unmaster'd grief sustain,
But yields to rage, to madness, and distain;
Then snatching out his falchion, " Thou," said he,
" Art mine; Ulysses lays no claim to thee.
" O often tried, and ever trusty sword,
" Now do thy last kind office to thy lord:
" 'Tis Ajax who requests thy aid, to show
" None but himself, himself could overthrow:"
He said, and with so good a will to die,
Did to his breast the fatal point apply.
It found his heart, a way till then unknown,
Where never weapon enter'd, but his own.
No hands could force it thence, so fix'd it stood,
Till out it rush'd, expell'd by streams of spouting blood.
The fruitful blood produc'd a FLOW'R, which grew
On a green stem, and of a purple hue:
Like his, whom unaware Apollo slew:
Inscrib'd in both, the letters are the same,
But those express the grief, and these *the name.*

OVID.

MARCH 20, the SOW-BREAD *(Cyclamen)*, flowers.

This beautiful Flower is of a delicate white, with a little border of purple about the brim of its pendulous cup. As it ripens its seeds, the peduncle bends towards the ground more and more, until it actually has penetrated into the earth, and deposited her treasures there for the ensuing season.

The gentle CYCLAMEN, with dewy eye,
Breathes o'er her lifeless babe the parting sigh;
And, bending low to earth, with pious hands,
Inhumes her dear departed in the sands.

Pether pinxt.

Elmes sculpt.

The Persian Cyclamen

London, Published for D.r Thornton 1804.

" Sweet Nursling! withering in thy tender hour,
" Oh, sleep," she cries, *" and rise a fairer Flower!"*
So when the plague o'er London's gasping crowds
Shook her dank wing, and steer'd her murky clouds;
When o'er the friendless bier no rites were read,
No dirge slow-chanted, and no pall out-spread;
While Death and Night fill'd up the naked throng,
And Silence drove their ebon cars along;
Six lovely daughters, and their father, swept
To the throng'd grave CLEONE saw, and wept;
Her tender mind, with meek Religion fraught,
Drank all-resign'd Affliction's bitter draught;
Alive and listening to the whisper'd groan
Of others' woes, neglectful of her own,
One smiling Boy, her last sweet hope, she warms,
Hush'd on her bosom, circled in her arms,
DAUGHTER OF WOE! ere morn, in vain caress'd,
Clung the cold babe upon thy milkless breast;
With feeble cries thy last sad aid requir'd,
Stretch'd its stiff limbs, and on thy lap expir'd!
Long with wide eye-lids on her child she gaz'd,
And long to heaven their tearless orbs she rais'd,
Then with slow step and throbbing heart she found
Where *Chartreuse* open'd deep his holy ground;
Bore her last treasure through the midnight gloom,
And kneeling dropt it in the mighty tomb.

DARWIN.

MARCH 30, the DAISY *(Bellis perennis)* flowers.

The date of the appearance of flowers is not very exact, as depending upon many circumstances, but it enables us to assemble together the chief flowers of the spring, as are marked out by poets, and to elucidate our comparison of *those flowers* to the *morning twilight*. Although the common DAISY has a tinge of red in its petals, it is so slight, as only to set off in contrast the more general *white appearance*. The rustic Caledonian bard thus paints it.

To a DAISY, *on turning one down with the plough in March* 1786.

Wee, modest, crimson-tipped flow'r,
Thou's met me in an evil hour;
For I maun crush among the stoure
Thy slender stem;
To spare thee now is past my pow'r,
Thou bonie gem.*

* How similar is this to the sentiment of our immortal bard Shakspeare on a grander occasion. Othello, jealous of his wife, the fair Desdemona, resolves to kill her. When about to commit the fatal act, upon seeing her, he relinquishes his cruel purpose of destroying her with the sword he held in his hand, but resolves to smother her——

Alas! its no thy neebor sweet,
The bonie larke, companion meet!
Bending thee 'mang the dewy weet!
Wi' speckl'd breast,
When upward-springing, blythe, to greet
The purpling East.

Cauld blew the bitter-biting North
Upon thy early humble birth;
Yet cheerfully thou glinted forth
Amid the storm,
Scarce rear'd above the parent earth
Thy tender form.

The flaunting flow'rs our gardens yield,
High shelt'ring woods and wa's maun shield;
But thou, beneath the random bield
O' clod or stane,
Adorns the histie stibble-field,
Unseen, alane.

There, in thy scanty mantle clad,
Thy *snawie bosom* sun-ward spread,
Thou lifts thy unassuming head
In humble guise;
But now the share uptears thy bed,
And low thou lies.

BURNS.

APRIL 1, the ANEMONY flowers.

The Wood ANEMONY *(Anemone nemorosa)* flowers when the twittering swallow first makes her appearance, and still, like the other spring flowers, it presents us with the delicate *white* petal, but much increased in magnitude, and only expands these, according to ancient obser-

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. . . . . I'll not shed her blood,
Nor scar that whiter skin of hers than snow,
And smooth as monumental alabaster;
Yet she must die, or she'll betray more men.
Put out the light, and then . . . . . .

meaning his resolve to smother her. As Othello approaches the two candles to extinguish them, he falls into the following natural train of reflections.

. . . . . Put out the light!
If I quench *thee*, thou flaming minister,
I can again thy former light restore,
Should I repent; but once put out *thy light*,
Thou cunning'st pattern of excelling nature,
I know not where is that Promethean heat,
That can *thy* light re-lumine.
When I have pluck'd thy rose,
I cannot give it vital growth again;
It needs must wither.

vation, when the wind blows, but the fact is, it is of Greek derivation, from its appearance in a month subject to a variety of winds.

All wan and shivering in the leafless glade,
The sad ANEMONY reclined her head;
Grief on her cheeks had paled the roseate hue,
And her sweet eye-lids dropp'd with pearly dew.
" Breathe, GENTLE AIR! from *cherub-lips* impart
" Thy *balmy influence* to my anguish'd heart;
" THOU, whose soft voice calls forth the tender blooms,
" Whose pencil paints them, and whose breath perfumes;
" O chase the FIEND OF FROST, with leaden mace,
" Who seals in death-like sleep our hapless race;
" Melt his hard heart, release his iron hand,
" And give my *ivory petals* to expand;
" So may each bud, that decks the brow of spring,
" Shed all its incense on thy wafting wing!"
To her fond prayer propitious ZEPHYR yields,
Sweeps on his sliding shell through azure fields,
O'er her fair mansion waves his whispering wand,
And gives her *ivory petals* to expand,
Gives with new life her filial train to rise,
And hail with kindling smiles the genial skies.
So shines the Nymph in beauty's blooming pride,
When ZEPHYR wafts her deep calash aside,
Tears with rude kiss her bosom's gauzy veil,
And flings her fluttering kerchief to the gale.
So bright, the folding canopy undrawn,
Glides the gilt Landau o'er the velvet lawn;
Of beaux and belles displays the glittering throng,
And soft airs fan them as they roll along.

DARWIN.

Not many days after the appearance of the swallow, a second HERALD of the return of Spring comes to us, the NIGHTINGALE (*Luscinia.*)

Borne on the warm wing of the western gale,
How tremulously sweet is heard to float
Through the green budding trees that fringe the vale,
The early *Nightingale*'s prelusive note.

'Tis Hope's instinctive power that through the grove
Tells, how benignant Heaven revives the earth;
'Tis the soft voice of young and timid love
That calls these melting sounds of sweetness forth.

CHARLOTTE SMITH.

This herb, usually esteemed "as the sweet emblem of renovated Nature," so cheerfully culled in every field, rises upon a slender scape, and hangs beautifully its tawny cups upon numerous peduncles, which issue from a common centre.

APRIL SONG.

Now *Daisies* pied, and *Vi'lets* blue,
And *Lady-smocks* all silver white,
And *Cuckoo-buds* of yellow hue,
Do paint the meadows with delight;
And cuckoo now on every tree
Mocks married men, for thus sings he,
Cuckoo! Cuckoo!—O word of fear,
Ungrateful to a married ear!

Shakspeare.

ADDRESS TO THE CUCKOO.

Hail, beauteous stranger of the wood,
Attendant on the Spring!
Now heaven repairs thy rural seat,
And woods thy welcome sing.

Soon as the *cowslip* decks the green
Thy certain voice we hear;
Hast thou a star to guide thy path,
Or mark the rolling year?

Delightful visitant! with thee
I hail the time of flowers,
When heaven is fill'd with music sweet
Of birds among the bow'rs.

The school-boy, wand'ring in the wood
To pull the flowers so gay,
Starts, thy curious voice to hear,
And imitates thy lay.*

Logan.

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* Besides the discovery of the Vaccine Disease as a substitute for the small pox, we are indebted to Dr. Jenner for a very curious and interesting history of the Cuckoo. This learned naturalist says the male only has the note of love. Being destined to remain but a short period in our island, the hen bird deposits her eggs in another's nest, as if conscious that fate impelled her to fly before the period of their hatching. The young Cuckoo follows afterwards, and has a conformation peculiar to itself. There is a hollow on the back, upon which it seats the other birds of a different sort, and thus placed, its next step is to raise itself, and turning on one side to shelve the nest, which it enjoys alone. When the hollow in the back is no longer wanted, it is filled up, and the young cuckoo is then shaped like other birds. The note of the Bittern among the reeds, from a pectinated claw, which it strikes against the reeds, of one of the digitations, is another doubtful point settled by the acute observation of this illustrious benefactor of mankind, and promoter of the science of natural history. For a full account of these several discoveries, vide my work, entitled *Facts decisive in favour of the Cow Pox, with the Evidence delivered before the Honourable the Committee of the House of Commons,* and the *Philosophical Transactions.*

As the spring advances, the Daffodil erects itself on a more elevated peduncle, whose flower is pale yellow, and has six petals affixed to a cup-like nectary. From the delicacy of these flowers the ancients drew the poetic fancy of a beautiful youth converted into this flower.

There stands a fountain in a darksome wood,
Nor stained with falling leaves nor rising mud;
Untroubled by the breath of winds it rests,
Unsully'd by the touch of men or beasts;
High bow'rs of shady trees above it grow,
And rising grass and cheerful flow'rs blow.
Pleas'd with the form and coolness of the place,
And over-heated by the morning chace,
Narcissus on the grassy verdure lies,
But whilst within the chrystal fount he tries
To quench his heat, he feels new fires arise:
For as his own bright image he survey'd,
He fell in love with the fantastic shade;
And o'er the fair resemblance hung unmov'd,
Nor knew, proud youth! it was himself he lov'd.
The well-turn'd neck and shoulders he descries,
The spacious forehead, and the sparkling eyes;
The hand that Bacchus might not scorn to show,
And hair that round Apollo's head might flow;
With all the purple youthfulness of face,
That gently blushes in the wat'ry glass.
By his own flames consum'd the lover lies,
And gives himself the wound by which he dies.
To the cold water oft he joins his lips,
Oft catching at the beauteous shade he dips,
His arms, as often from himself he slips,
Nor knows he who it is his arms pursue
With eager clasps, and loves he knows not who.
Still o'er the fountain's wat'ry gleam he stood,
Heedless of sleep, and negligent of food,
Still view'd his face, and languish'd as he view'd.
At length he rais'd his head, and thus began
To vent his griefs, and tell the woods his pain.
" You trees," cries he, " and thou surrounding grove,
" Who oft have been the kindly scenes of love,
" Tell me, if e'er within your shades did lie
" A youth so tortur'd, so perplex'd as I?
" I, who before me see the charming fair,
" Whilst there she stands, and yet she stands not there:
" In such a maze of love my thoughts are lost,
" And yet no bulwark'd town, nor distant coast,

" Preserve the beauteous fair from being seen,
" Nor mountains dire, nor oceans flow between.
" A shallow water hinders my embrace;
" And yet the lovely mimic wears a face
" That kindly smiles; and when I bend to join
" My lips to hers, she fondly bends to mine.
" Hear, gentle maid, and pity my complaint,
" Come from thy well, thou fair inhabitant.
" My charms an easy conquest have obtain'd
" O'er other hearts, by thee alone disdain'd.
" But why should I despair? I'm sure she burns
" With equal flames, and languishes by turns.
" Whene'er I stoop, she kindly bends to me,
" And when my arms I stretch, the same does she.
" Her eye with pleasure on my face she keeps,
" She smiles my smiles, and when I weep she weeps.
" When e'er I speak, her moving lips appear
" To utter something, which I cannot hear.—
" Ah wretched me! I now begin too late
" To find out all the long-perplex'd deceit;
" It is myself I love, myself I see;
" The gay delusion is a part of me.
" I kindle up the fires by which I burn,
" And my own beauties from the well return.
" Whom should I court? how utter my complaint?
" Enjoyment but produces my restraint,
" And too much plenty makes me die for want.
" How gladly would I from myself remove!
" And at a distance set the thing I love.
" My breast is warm'd with such unusual fire,
" I wish him absent whom I most desire.
" And now I faint with grief; my fate draws nigh;
" In all the pride of blooming youth I die.
" Death will the sorrows of my heart relieve.
" Oh might the visionary youth survive,
" I should with joy my latest breath resign!
" But oh! I see his fate involv'd in mine."
This said, the weeping youth again return'd
To the clear fountain, where again he burn'd;
His tears defaced the surface of the well,
With circle after circle, as they fell:
And now the lovely face but half appears,
O'errun with wrinkles, and deform'd with tears.
" Ah whither," cries Narcissus, " dost thou fly?
" Let me still feed the flame by which I die;
" Let me still see, though I'm no further blest."
Then rends his garments off, and beats his breast:

His naked bosom redden'd with the blow,
In such a blush as purple clusters show,
Ere yet the sun's autumnal heats refine
Their sprightly juice, and mellow it to wine.
The glowing beauties of his breast he spies,
And with a new redoubled passion dies.
As wax dissolves, as ice begins to run,
And trickle into drops before the sun;
So melts the Youth, and languishes away,
His beauty withers, and his limbs decay;
And none of those attractive charms remain,
To which the slighted Echo su'd in vain.
She saw him in his present misery,
Whom, spight of all her wrongs, she griev'd to see.
She answer'd sadly to the lover's moan,
Sigh'd back his sighs, and groan'd to every groan;
"Ah youth! belov'd in vain," Narcissus cries;
"Ah youth! belov'd in vain," the Nymph replies.
"Farewel," says he; the parting sound scarce fell
From his faint lips, but she replied "Farewel."
Then on th' wholesome earth he gasping lies,
Till death shuts up those self-admiring eyes.
To the cold shades his flitting ghost retires,
And in the Stygian waves itself admires.
For him the Naiads and the Dryads mourn,
Whom the sad Echo answers in her turn;
And now the Sister-nymphs prepare his urn;
When, looking for his corpse, they only found
A rising Stalk, with yellow Blossoms crown'd.

OVID.

APRIL 20, the HYACINTH *(Hyacinthus)* flowers.

This plant, like most of the others of spring extraction, in its wild state, hangs down its azure bells, and having a delightful scent, is one of the most agreeable gifts that Providence has bestowed upon mortals, whom the enraptured admirer of Flowers thus elegantly invites.

AN EASTERN ODE.

Child of the Spring, thou charming Flow'r,
No longer in confinement lie,
Arise to light, thy form discover,
Rival the azure of the sky.

The rains are gone, the storms are o'er;
Winter retires to make thee way:
Come then, thou sweetly blooming flow'r;
Come, lovely stranger, come away.

The sun is dress'd in beaming smiles,
To give thy beauties to the day:
Young zephyrs wait with gentlest gales,
To fan thy bosom as they play.

CASIMIR.

From the plaintive air it assumes in its wild state, arose to the imagination of the poet the fancy of a Youth converted into this flower.

I die, I die, young HYACINTHUS said,[b]
Sunk on the earth, and droop'd his lovely head.
Quick to his aid distress'd APOLLO flew,
And round the hero's neck his arms he threw.
But whilst he held him to his throbbing breast,
And all the anguish of his soul exprest,
His polish'd limbs by strange enchantment's pow'r
Shoot into buds, and blossom into flow'r;
His auburn locks in verdant foliage flow,
And wreaths of azure florets shade his brow.

OVID.

Although the Hyacinth cannot boast of a vestment of crimson, and variety of stripes, yet is this flower, from its early appearance, and the effect that cultivation produces on it, made one of the most pleasing gifts proceeding from the Deity. Botanists have usually affected to despise double flowers, forgetful that the benevolence of the Almighty is best displayed in such productions, and have branded them by the appellation of *Monsters*. They are, however, useful, not only as agreeable objects, but scientifically, proving most satisfactorily the doctrine of the sexes of plants; for the Hyacinth in its natural state has six Stamina and one Pistillum, and is productive; the Petals are likewise six; but in a *cultivated* state the flowers cease to be pendulous, and the Petals are so considerably multiplied, as to constitute the whole of the flower, and there is neither Stamina nor Pistillum, and consequently no propagation by seeds, but merely by offsets from the bulbs. The Double White Hyacinth has been denominated LA HEROINE; that which is double and all of a light blue, GLOBE TERRESTRE. The DIANA VAN EPHESON is a double White HYACINTH, with small red spots; and VELOUR PURPRE is the dark double Blue Hyacinth with green at the edges of the petals; and the Single dark Blue is named DON GRATUIT.

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[b] Hyacinthus was accidentally struck by a quoit slung by Apollo, and killed on the spot. He was converted into the flower that bears his name, and Apollo's grief was allayed by viewing the beauties of this charming flower. Vide OVID'S METAMORPHOSIS.

S. Edwards pinxt

Warner sculpt

Hyacinths.

London Published June 1 1801. by Dr Thos

Robert John Thornton M.D. pinx.t

Earlom sculp.t

ROSES

London, published by Dr. Thornton, October 1st 1805

A GROUP OF ROSES.

THE ROSE *(Rosa)* is esteemed as a *Spring Flower,* whose attendants have been before described, and she moves at the head of this long procession of vegetable beauties, pouring out her incense to FLORA, with all the grace and dignity of majesty. Nature has given her a vest of purest white, and also imperial robes of the brightest scarlet; and that no rude hand should tear her from her rich domain, she is protected by myriads of soldiers, who present on every side their naked and sharp swords against the daring invader.

This flower is ranked of the class POLYANDRIA, order POLYGYNIA, of Linnæus.

Not the bright sun-flow'r's top of burnish'd gold,
The yellow jonquil, vary-colour'd pink,
The lily dress'd with innocence and grace,
The wild-born daisy, and the violet blue,
Or the fair primrose, that at spring's advance
Seems to grow pale, when from her green lap thrown
So many glitt'ring rivals rise around;
Not the sweet twining woodbine, heart's-ease rich
Purpled with gold-dropt velvet, or the fair,
But humble snow-drop, beaming through the mist
Like the big tear for lov'd Adonis slain,
Through the fring'd eye-lids of the Queen of Love!
Catch my admiring eye, like thy *pure flow'r,*
Emblem of infant innocence, sweet ROSE!

HUNT.

The RED ROSE is styled the *Queen of Flowers* in a charming Arabic Ode* by HAFIZ.

Now is the season, ROSES gay
Light purple-tinctur'd blooms display:
When fathers thus their sons invite
To the fair bowers of delight,
" Time will your sprightliness destroy,
" Then give the present hours to joy;

---

* This translation is from the Latin of Sir WILLIAM JONES. It is worthy of observation, that the trade from Persia to the East Indies consists chiefly of *Nightingales* in cages, which bird is not to be met with in any parts of India.

" Assemble all, convivial join,
" The sacred carpet* sell for wine.
" And while you feel the fanning breeze,
" Which whispers through the waving trees,
" Pray, that some damsel here may stray,
" Love the director of her way,
" And to her health and charms divine,
" Quaff goblets of enliv'ning wine.
" Is fortune cruel? Then go suit,
" To querulous complaint, the lute;
" From the touch'd strings make music float,
" On air in soft melodious note.
" When first you see in fragrant bowers
" The Rose, resplendent *Queen of Flowers!*
" Then let the goblets brimful shine,
" With bright nectareous racy wine!
" Wine can the tender pangs remove,
" And cause forgetfulness in love.
" The sweetly warbling *Nightingale,*†
" With melody fills every dale.
" How can she cease, sweet bird of Spring!
" 'Mid *budding Roses* perch'd to sing?"

---

* The Mahommedans prostrate themselves upon a carpet at the hour of prayer, hence held sacred.

† In the East, where every thing is, from the fervor of a lively imagination, painted in hieroglyphic characters, the return of the Nightingale from Egypt to Persia, and the flowering of the Rose, as the characteristics of spring, gave rise most probably to the *hybrid*, so frequently described in Oriental poetry.

Thus the sweet Nightingale in eastern bowers
On quivering pinion woos the Queen of Flowers;
Inhales her fragrance, as he hangs in air,
And melts with melody *the blushing fair*;—
Half-rose, half-bird, a beauteous Monster springs,
Waves his thin leaves, and clasps his glossy wings.
Long horrent thorns his slender legs surround,
And tendril-talons root him to the ground;
Green films of rind his wrinkled neck o'erspread,
And crimson petals crown his curled head.
To the sweet *Zephyrs* soft warbling as they move
In songs of love he thrills the vocal grove.
Departing *Evening* stays her beamy star,
And still *Night* lingers in his ebon car;
While on white wings descending *Houries* throng,
And drink the floods of *odour* and of *song*.

Darwin.

Both the Swallow and Nightingale in the winter months retire to Egypt. Anacreon thus addresses the *Swallow*.

ODE TO THE SWALLOW.

Once in each revolving year,
Gentle bird! we find thee here.
When Nature wears her summer vest,
Thou com'st to weave thy simple nest;
But when the chilling winter lowers,
Again thou seek'st the genial bowers
Of Memphis, or the shores of Nile,
Where constant hours of verdure smile.

ANACREON thus celebrates the ROSE, which it was the custom among the ancients to throw into bowls of wine, and make chaplets of to adorn the Bacchanalians.

Buds of ROSES, virgin flowers,
Cull'd from CUPID's balmy bowers,
In the bowl of BACCHUS steep,
Till with crimson drops they weep,
Twine the ROSE, the garland twine,
Every leaf distilling wine;
Drink and smile, and let us think
That we were born to smile and drink.
ROSE! thou art the *sweetest flower*
That ever drank the purple shower;
ROSE! thou are the *fondest child*
Of dimpled SPRING, the Wood-Nymph wild!
Even the GODS, who walk the sky,
Are amorous of *thy scented sigh.*
CUPID too, in Paphian shades,
His hair with rosy fillet braids,
When with the blushing nimble GRACES,
The merry winding dance he traces.

There is another Ode of ANACREON in praise of the Rose, extremely beautiful, giving an account of its birth.

See the young, the timid SPRING
Gives to the breeze her spangled wing;
While virgin GRACES, warm with may,
Fling ROSES o'er her dewy way.
The murmuring billows of the deep
Have languish'd into silent sleep;
And mark! the flitting sea-birds lave
Their plumes in yon reflecting wave;
And cranes from hoary winter fly,
To flutter in a kinder sky;
Now the genial star of day
Dissolves the murky clouds away,
And cultur'd field, and winding stream,
Are sweetly tissued by his beam.
When SPRING bedecks the dewy scene,
How *sweet* to walk the velvet green,

That the *Nightingale* retires to Egypt is confirmed by SONNINI in his Travels into Upper and Lower Egypt. "I met," says this Traveller, "with several Nightingales, who frequent the most shady thickets in the vicinity of the water. They are "silent in Egypt, which they leave in spring, to warble out their songs of love, and hail her arrival in other countries."—— The female birds appear with us always a few days before the males are seen. They reach Italy usually on the twenty-fourth of March, and visit our isle by the second of April.

And hear the ZEPHYR's languid sighs,
As o'er the scented mead he flies!
How *sweet* to mark the pouting vine,
Ready to fall in tears of wine!
How *sweet* the voice of love to hear,
And softly whisper in the ear.
Where the embowering ROSES meet,
Oh! is not this *divinely sweet?*
While thus we chaunt the wreathed SPRING,
Resplendent ROSE! to *thee* we'll sing;
Resplendent ROSE, the *flower of flowers,*
Whose breath perfumes Olympus' bowers;
Whose virgin blush, of chasten'd dye,
Enchants so much our mortal eye.—
When pleasure's bloomy season glows,
The GRACES love to twine the ROSE;
The ROSE is warm DIONE's bliss!
And flushes like DIONE's kiss!
Oft has the POET's magic tongue
The ROSE's fair luxuriance sung;
And long the MUSES, heav'nly maids,
Have rear'd it in their tuneful shades,
When, at the early glance of morn,
It sleeps upon the glittering thorn.
'Tis *sweet* to dare the tangled fence,
To cull the timid *flowret* thence,
And wipe with tender hand away
The *tear* that on its *blushes* lay.
'Tis *sweet* to hold the infant stems,
Yet dropping with Aurora's gems,
And fresh inhale the spicy sighs
That from the weeping *buds* arise.
When revel reigns, when mirth is high,
And Bacchus beams in every eye,
Our ROSY fillets scent exhale,
And fill with balm the panting gale!
Oh! there is nought in nature bright,
Where ROSES do shed their light!
When morning paints the orient skies,
Her fingers burn with ROSEATE dyes!
The nymphs display the ROSE's charms,
It mantles o'er their graceful arms;
Through Cytherea's form it glows,
And mingles with the living snows!—
Oh! *Whence could such a plant have sprung!*
Attend, for thus the tale is sung.

When, rising from the silvery stream,
Effusing beauty's warmest gleam,
VENUS † appear'd, in flushing hues,
Mellow'd by ocean's briny dews;—
When, in the starry courts above,
The pregnant brain of mighty JOVE
Disclos'd the NYMPH OF AZURE GLANCE,
The NYMPH who shakes the MARTIAL LANCE. ‡
Then, then, in strange eventful hour,
The EARTH § produced an *infant flower,*
Which sprung, with *blushing tinctures* drest,
And *wanton'd* o'er its *parent's breast.*—
The GODS beheld this brilliant birth,
And hail'd the *Rose,* the boon of earth.
With nectar drops, a ruby tide,
The sweetly orient *buds* they dy'd;

---

† Anacreon, with exquisite grace, in another Ode describes this birth of Venus, and represents the goddess as swimming on the soft wave.

Light as the leaf, that summer's breeze
Has wafted o'er the glassy seas,
She floats upon the ocean's breast,
Which undulates in sleepy rest,
And stealing on, she gently pillows
Her bosom on the amorous billows;
Her bosom, like the humid rose,
Her neck, like dewy-sparkling snows,
Illume the liquid path she traces,
And burn within the stream's embraces!
In languid luxury soft she glides,
Encircled by the azure tides;
Then, from their Queen's inspiring glance,
The Dolphins o'er the green sea dance,
Bearing in triumph young Desire,
And baby Love with smiles of fire.
While, sparkling on the silver waves,
The tenants of the briny caves
Around the pomp in eddies play,
And gleam along the watery way. MOORE.

This is certainly more beautiful than the *usual* delineation of Venus rising up out of the sea.

With *rosy* fingers, as uncurl'd they hung
Round her fair brow, her golden locks she wrung;
O'er the smooth surge on silver sandals stood,
And look'd enchantment on the dazzled flood.
The bright drops, rolling from her lifted arms,
In slow meanders wander o'er her charms,
Seek round her snowy neck their lucid track,
Pearl her white shoulders, gem her ivory back,
Round her fine waist and swelling bosom swim,
And star with glittering brine each crystal limb.
Th' immortal form enamour'd Nature hail'd,
And *Beauty* blaz'd to heaven and earth unveil'd.
DARWIN.

‡ Pallas, or Minerva, the Goddess of Wisdom, is represented as proceeding from the brain of Jove, completely armed. For the origin of the fable of Venus arising from the sea, vide our Philosophy of Botany, page 134; and for this fable, note * to the Verses on the Nymphea Nelumbo, by Sir William Jones, who describes the birth of *Maia,* the Minerva of the Asiatics. "She is represented with blue eyes," says Bacon, "to shew the soft persuasion of words; and all armed, with a shield covered with snakes, to express the pathetic power of all-overcoming eloquence. Her bird is the owl, to point out the sedateness of wisdom."

§ When the SEA produced *Venus*; JUPITER *Minerva*; then the EARTH produced the *Rose.* How exquisite the compliment!

And bade them bloom, the *flowers* divine
Of *him* * who sheds the teeming vine;
And bade them on the spangled thorn
Expand their bosom to the morn.

MOORE.

SAPPHO, the Lesbian Poetess, gives us another origin, and elegantly represents the *white rose* as converted into the *red*, from the emotions of the heart suffusing the face of love.

IF JOVE would give the leafy bowers
A *queen* for all their world of flowers,
The ROSE would be the choice of Jove,
And reign the *queen* of every grove.
Sweetest child of weeping morning,
Gem, the vest of earth adorning,
Eye of flow'rets, glow of lawns,
Bud of beauty, nurs'd by dawns:
Soft the soul of love it breathes,
Cypria's brow with magic wreaths;
And to the *Zephyr's* warm caresses
Diffuses all its verdant tresses,
Till, *glowing* with the wanton's play,
It *blushes* a *diviner ray!*

MOORE.

The origin of the *red rose* is differently accounted for by CATULLUS, who describes it as proceeding from the blood of Venus falling upon the *white rose*, as her tender feet were torn by its thorns in attempting to rescue *Adonis* from the jealous resentment of *Mars*.

WHILE the enamour'd queen of joy
Flies to protect her lovely boy,
On whom the jealous war-god rushes;
She treads upon a thorny *rose*,
And, while the wound with *crimson* flows,
The *snowy flow'ret feels her blood, and blushes.*

MOORE.

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* The *Rose*, as well as the *Vine*, was consecrated to *Bacchus*, and the ancients not only crowned themselves with roses, but cast them into the bowl. Vide note * on the Nymphea Nelumbo.

They wove the *Lotus* band to deck
And grace with sweets the blooming neck;
And every guest, to shade his head,
Three charming little chaplets spread;
And one was of Egyptian leaf,
The rest were *roses*, fair and brief.
Then from the sparkling vase profound
To all on flow'ry beds around,
A sprightly Nymph of heavenly shape,
Pour'd the rich weepings of the grape.

MOORE.

Tempora sectilibus cinguntur tota coronis,
Et latet injectâ splendida mensa rosâ.

OVID.

The fugaciousness of the charms of *the rose* was made with the ancients* a reason for enjoying the present hour.

A MODERN ANACREONTIC SONG.

Ye flow'rs that drink the morning dew,
Roses, that court the sunny ray,
Connubial leagu'd, your tribes renew,
And bid them all their charms display.

Bid them to shine the parterre's pride,
Or on the fragrant hedge-row gleam,
Or bending from the green-bank side,
Kiss their own beauties in the stream.

Ah! why should they, a fading race,
Be niggard of their sweetest bloom?
That earth, whence they shall rise in grace,
That earth shall soon become their tomb.

Another *Archer* lies unseen;
Ne'er from their mark his arrows stray—
And *Love* shall drop his arrows keen,
And leave to *Death* a trembling prey.

Thus Man his proudest glory shews;
Thus soon his proudest glory dies;
Like the young plant awhile he glows;
Like the frail flow'r lives, shines, and dies.

---

* "Let us eat and drink, for to-morrow we die." Or, in the real language of Anacreon,

The women tell me every day,
That all my bloom has past away.
'Behold,' the pretty wantons cry,
'Behold this mirror with a sigh;
'The locks upon thy brow are few,
'And, like the rest, are withering too!'
Whether decline has thinn'd my hair,
I'm sure I neither know nor care;
But this I know, and this I feel,
As onward to the tomb I steal,
That still as death approaches nearer,
The joys of life are sweeter, dearer;
And had I but an hour to live,
That little hour to bliss I'd give!
Then surely, *Care*, thou can'st not twine
Thy fetters round a soul like mine;
No, no! the heart that feels with me,
Can never be a slave to thee!
And oh! before the vital thrill,
Which trembles at my heart, is still,
I'll gather joy's luxuriant flow'rs,
And yield with bliss my fading hours;
Venus shall make my winter bloom,
And *Bacchus* dance me to the tomb.

Moore.

Hear then the Muse—Thou short-liv'd race,
Urge not your fleeting hours away,
Crowd not with cares your little space;
Wise is the man who lives *his day*.

GEORGE DYER.

In the *Epithalamium*, or marriage song, ANACREON compares the bride to the *red rose*; to that sort, I suppose, which has among us the common appellation of the *Maiden's Blush*.

TO THEE, *the Queen* of nymphs divine,*
Fairest of all that fairest shine!
TO THEE, *thou blooming young Desire,†*
Who rul'st the world with darts of fire!
And oh! *thou Nuptial Power,‡* to THEE
Who bear'st of life the guardian key!
Breathing my soul in fragrant praise,
And weaving wild my votive lays,
TO THEE, *O Queen!* I wake the lyre,
TO THEE, *thou blushing young Desire!*
And oh! for THEE, *thou Nuptial Power!*
Come and illume this genial hour.
Look on thy bride, impassion'd boy!
And while thy lambent glance of joy
Plays over all her *blushing* charms,
Delay not; snatch her to thine arms,
Before the lovely, trembling prey,
Like a young birdling, wings away.
Oh, *Statocles!* impassion'd youth!
Dear to the Queen of amorous truth,
And dear to *her*, whose yielding zone
Will soon resign *her* all thine own;
Turn to *Myrilla*, turn thine eye,
Breathe to *Myrilla*, breathe thy sigh!
To those bewitching beauties turn,
For *thee* they mantle, flush, and burn!—
Not more the ROSE, *the queen of flowers*,
Out-blushes all the glow of bowers,
Than *she* unrivall'd bloom discloses,
The sweetest *Rose*, where all are *Roses!*—
Oh! may the SUN,§ benignant, shed
His blandest influence o'er thy bed;
And foster there an infant tree,
To *blush* like her, and look like thee. ¶

MOORE.

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* Venus. † Cupid. ‡ Hymen. § Apollo.

¶ After the feast, which was held at the father's house, the bridegroom took home his wife in the dusk of the evening, accompanied by all the relatious on both sides, and a number of attendants followed with torches, and music. In this way they were conducted to the marriage-chamber, where the bride washed her feet After this ceremony the bridegroom untied the girdle. The attendants left the room; when the Epithalamium or Nuptial Song, was sung in honour of the pair, always concluding with the wish of the inheritance of children. The same ceremony was also in use among the Jews. Psalm XLV. is a song of this kind. The bride of Solomon is compared to the *Rose of Sharon*.

The married are resembled by METASTASIO to the young Rose, which the lover places in the bosom of his mistress, first stript of thorns.

THOU virgin ROSE! whose op'ning leaves so fair,
The dawn has nourish'd with her balmy dews;
While softest whispers of the morning air
Call'd forth the blushes of thy vermeil hues.

That cautious hand, which cropt thy youthful pride,
Transplants thy honours, where from hurt secure,
Stript of each thorn offensive to thy side,
Thy nobler part alone shall bloom mature.

Thus thou, *a flower*, exempt from change of skies,
By storms and torrents unassail'd, shall rise,
And scorn the winter colds, and summer heats:
A *guard* more faithful *then* thy growth shall tend,
By whom thou may'st in tranquil union blend
Eternal beauties with eternal sweets.

ROSCOE.

TO THE ROSE.

SACRED to beauty's Queen, hail lovely flow'r!
How sweet the fragance of thy scented bow'r!
In graceful folds thy milk-white vestments flow,
Or a pale blush o'erspreads thy modest brow.
Round thy fair form what *crowds* of flatt'rers stand;
Praise thy fine shape, and court thy snowy hand.
Ah, simple maid! thy charms will soon decay,
Will fade and wither at the close of day!

FRANCES ARABELLA ROWDEN.

The decay of the charms of the *Rose* very properly leads to serious and moral reflections.

SONG.

THE pride of ev'ry grove I chose,
The Violet sweet, and Lily fair,
The dappled Pink, and blushing *Rose*,
To deck my charming CHLOE's hair.

At morn the nymph vouchsaf'd to place
Upon her brow the various wreath;
The flow'rs less blooming than her face,
The scent less fragrant than her breath.

The flow'rs she wore along the day:
  And ev'ry nymph and shepherd said,
'That in her hair they look'd more gay
  'Than growing in their native bed.'

Undrest at ev'ning, when she found
  Their odours lost, their colours past;
She chang'd her look, and on the ground
  Her garland and her eye she cast.

That eye dropt sense distinct and clear,
  As any Muse's tongue could speak;
When from its lid a pearly tear
  Ran trickling down her beauteous cheek.

Dissembling what I knew too well,
  'My Love, my Life,' said I, 'explain
'This change of humour; pr'ythee tell:
  'That falling tear, what does it mean?'

She smil'd, she sigh'd; and to the flow'rs
  Pointing, the lovely *Moralist* said:
'See, friend! in some few fleeting hours,
  'See yonder, what a change is made.

'What though each Grace around me play,
  'Each Beauty bloom for you;
'Warm as the blush of rising May,
  'And sparkling as the dew:

'Ah me! the blooming pride of May,
  'And that of Beauty are but one:
'At Morn both flourish bright and gay,
  'Both fade at Ev'ning, pale and gone.

'So pass the *Beauties* of our prime,
  'That e'en in blooming die;
'So, shrinking at the blast of Time,
  'The treach'rous *Graces* fly.

PRIOR.

And to the following.

AWAKE, my fair, the morning springs,
  The dew-drops glance around;
The heifer lows, the blackbird sings,
  The echoing vales resound.

The simple sweets would *Stella* taste,
  That breathing morning yields;
The fragrance of the flow'ry waste,
  And freshness of the fields:

By uplands, and the greenwood-side,
We'll take our early way,
And view the valley spreading wide,
And opening with the day.

Nor uninstructive shall the scene
Unfold its charms in vain;
The fallow brown, the meadow green,
The mountain and the plain.

Each dew-drop glist'ning on the thorn,
And trembling to its fall;
Each blush that paints the Rose of morn
In fancy's ear shall call:

'O ye, in youth and beauty's pride,
'Who lightly dance along;
'While laughter frolics at your side,
'And rapture tunes your song!

'What though each grace around you play,
'Each beauty bloom for you;
'Warm as the blush of rising day,
'And sparkling as the dew:

'The blush that glows so gaily now,
'But glows to disappear;
'And, quiv'ring from the bending bough,
'Soon breaks the pearly tear!

'So pass the beauties of your prime,
'That e'en in blooming die;
'So, shrinking at the blast of time,
'The treach'rous graces fly.

'Let those, my *Stella*, slight the strain,
'Who fear to find it true;
'Each fair, of transient beauty vain,
'And youth as transient too!

MORAL.

'With charms that win beyond the sight,
'And hold the willing heart,
'My *Stella* shall await their flight,
'Nor sigh when they depart.

'Still *graces* shall remain behind,
'And *beauties* still controul
'The *graces* of the polish'd mind,
'And *beauties* of the soul.

Barclay.

THE INVITATION.

FRUIT of Aurora's tears, fair ROSE!
On whose soft leaves fond Zephyrs play,
O Queen of flow'rs! thy buds disclose,
And give thy fragrance to the day:

Unveil thy *transient* charms:—Ah, no!
A little be thy bloom delay'd,
Since the same hour that bids thee blow,
Shall see thee *droop thy languid head!*

But go, and on THEMIRA's breast,
Find, *happy flower!* thy throne and tomb;
While, jealous of a fate so blest,
How shall I envy thee thy doom!

Should some rude hand approach thee there,
Guard the sweet shrine thou wilt adorn:
Ah, punish those who rashly dare,
And for my rivals keep thy *thorn.*

LOVE shall himself thy boughs compose,
And bid thy wanton leaves divide;
He'll shew thee how, my lovely ROSE,
To deck her bosom, not to hide.

And *thou* shalt tell the *cruel maid*
How frail are Youth and Beauty's charms;
And teach her, ere her own shall fade,
To give them to her lover's arms.

From the French of CARDINAL DE BERNIS,
by CHARLOTTE SMITH.

FIRST ODE

TO

SPRING.

STERN Winter hence with all his train removes,
And cheerful skies and limpid streams are seen;
Thick sprouting foliage decorates the groves,
Reviving herbage robes the fields with green.

*God of day,** whose genial power
Revives the buried seed,
That fills with foliage ev'ry bower,
With verdure ev'ry mead,

Bid all thy vernal breezes fly,
Diffusing mildness through the sky;
Give the soft season to our drooping plains,
Refreshed with rosy dew and salutary rains.

Enough has *Winter's* hand severe
Chastis'd this dreary coast;
And chill'd the tender dawning year
With desolating frost.

Give but thy vital beams to play,
These ice-wrought scenes will melt away,
And mix'd in sprightly dance, the blooming powers
Will wake the drowsy SPRING; the SPRING the flowers.
In *virtue* then let's emulate the blest above,
And like the *Spring* display *benevolence and love.*

HARRISON.

---

* Apollo.

SECOND ODE

TO

SPRING.

MILD Season of the infant Year!
Soon as *thy* tender buds appear,
I feel my bosom glow;
It glows, to see *thy* germs of life,
Spite of each elemental strife,
Burst through surrounding snow.

With joy, beneath *thy* influence bland,
I mark each vernal leaf expand,
Presageful of the bloom;
The livelier tint of ev'ry bow'r,
The daily growth of ev'ry flow'r,
Each exquisite perfume.

Now, grateful for the genial skies,
To Heaven the mingled odours rise,
And bring it's blessings down;
An added vigour, ev'ry day,
A richer foliage, boasts each spray,
Nor dreads the tempest's frown.

Know, SPRING! though winds tyrannic join,
And all the elements combine,
Thy progress to dispute;
The humblest plant, by Heav'n decreed
To live for ever in it's seed,
Shall never fail of fruit.

Blest Season! thy benignant pow'r
Extend to ev'ry Human Flow'r,
And aid the growth of Mind;
Till, vigour crowning ev'ry part,
The richer incense of the heart
Bring bliss for *all* mankind.

Then, though the stormy Passions blow,
Impelling Man to prove Man's foe,
On War's * destructive plain;
REASON the Nations shall address,
The sanguinary rage repress,
And *Peace Perpetual* reign.

HARRISON.

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* This work was brought out during one of the most cruel wars that ever desolated the world, in which it was decreed by the National Assembly of France, "that no English prisoners were to be made, but all put to the sword." The army *refused* to ratify it.

Now it is that NAPOLEON, not content with the Empire of France, endeavours to *conquer* the whole of civilized Europe.

ONE murder makes a *villain*,
Millions a *hero.*—*Princes* are privileg'd
To kill; and numbers sanctify the crime.
Ah! why will *Kings* forget that they are *men*?
Why delight in human sacrifice? why burst the ties
Of nature, that should knit their souls together
In one soft bond of amity and love?
Yet still *they* breathe destruction, still go on
Inhumanly ingenious to find out
New pains for life, new terrors for the grave;
Artificers of death! Still *Monarchs* dream
Of *universal empire* growing up
From *universal ruin.*—Blast the design,
Great GOD OF HOSTS! nor let thy creatures fall
Unpitied victims at *ambition's shrine.*

BISHOP PORTEUS.

Such conduct in mortal *man* is, indeed, truly astonishing. "*Man*, armed with a little *brief* authority, does that, which makes *angels weep!*"

Behold! how GOD denounces his vengeance against such *Destroyers of Mankind.*

A PROPHECY.

Worthy to be read by all Emperors, Kings, Princes, and Rulers.

"The whole earth is at rest, and is quiet; the trees break forth into a joyful shout, even the fir-trees rejoice over *thee*, and the cedars of Lebanon, saying, Since *thou* art fallen, no feller is come up against us.

"How art *thou* fallen from heaven, O APOLLYON, the destroyer! How art *thou* cut off from the earth, *thou* who didst subdue the nations! For *thou* hast said in thine heart, 'I will be like the Most High.'—Yet art *thou* brought down to the mansions of the dead, and to the sides of the pit.

"Then will it be said, 'Is this the *man* that made the earth to tremble, that shook the kingdoms? That made the world as a *wilderness*, and destroyed *the cities*?'

"All the kings of the nations lie in glory, every one in his own sepulchre. But *thou* art cast out of *thy* grave like an *abominable branch*; and as a *carcase* trodden under foot."

"*Thou* shalt not, O KING, be joined with THEM *in burial.*—BECAUSE THOU HAST DESTROYED THE LAND, AND SLAIN THE PEOPLE." ISAIAH, Chap. XIV.

THIRD ODE

TO

SPRING.

SPRING! thy impatient bloom restrain,
Nor wake so soon thy genial pow'r,
For deeds of death must hail thy reign,
And clouds of fate around thee low'r.

Ah! not in all thy store of charms
Can gen'rous hearts their comfort find,
Or lull to peace the dread alarms
Which rack the friends of human kind.

In vain thy balmy breath to *me*
Scents with its sweets the ev'ning gale;
In vain the violet's charms I see,
Or fondly mark thy primrose pale.

To me thy softest zephyrs breathe
Of sorrow's soul-distracting tone,
To me thy most attractive wreath
Seems ting'd with human blood alone.

Arrest thy steps, thou source of love,
Thou genial friend of joy and life!
Let not thy smile propitious prove
To works of carnage, scenes of strife.

Bid WINTER all his frowns recall,
And back his icy footsteps trace;
Again the soil in frost inthrall,
And check the *War-fiend's* murd'rous chace.

Ah *fruitless prayer!* thy hand divine
Must on the teeming SEASON lead,
And (*contrast dire!*) at war's red shrine
Must let unnumber'd victims bleed.

ANONYMOUS.

STANZAS

AGAINST

WAR.

HEAR ye yon *Bell,* its sullen sound that flings
In solemn cadence o'er the echoing vale?—
To every ear a *gloomy thought* it brings,
Mirth laughs no more, e'en Valour's spirits fail—

But hark! the knell is drown'd—tempestuous floats
On the swoln breeze the tumult of the war;
Shrill sound the cheering trumpet's martial notes,
And loud the battery thunders from afar:

With kindling flame reviving Valour hears,
Strong beats his breast; while e'en the coward slave,
Stung by the rousing peal, forgets his fears,
Pants for the field, and fancies he is brave.

Oh say, why this, ye *wise!*—the *death-bell* shows
What Fate has done; not urges Fate's decrees—
Marks but *one victim* snatch'd from human woes,
Bent by chill age, perhaps, or pale disease.

But shouting squadrons at the trumpet's breath
O'er *mangled* thousands urge their furious way;
The thundering battery sweeps to instant death
Its slaughter'd myriads from the light of day.

Not worn with pain, not struck by palsied age,
The *ripen'd* harvest of the greedy tomb;
Timeless they fall in manhood's glowing prime,
Health's vigorous hour, or youth's ingenuous bloom!

HENRY JAMES PYE,
POET LAUREATE.

SECOND ODE

AGAINST

W A R.

How mild the Sun's meridian rays!
How blue the Heavens! how soft the Breeze
That o'er the waving forest plays,
And gently curls the ripling seas!
But soon *November*'s wint'ry hour,
Arm'd with the Tempest's tyrant power,
Shall rouse the clouds' embattled host,
Sweep from the woods their leafy pride,
And dash the wave's infuriate tide
Against the howling coast!

So in each Ship's stupendous womb,
Now gently floating on the deep,
Peaceful, as in the silent tomb
The *Demons of Destruction* sleep;
But wak'd by *War*'s terrific roar,
Prompt o'er each desolated shore
Their *hell*-directed flight to urge,
And leading Slaughter's horrid train,
With hecatombs of warriors slain,
To load th' empurpled surge!

What though at warlike GALLIA's chiefs *
The spear of vengeance Britain aims,

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* It is really astonishing to think with what *coolness* the majority of mankind talk of *war*. They only consider it as a *natural* evil, and that ALMIGHTY GOD wills it, and, therefore, man must submit to it as *such*. Now, surely, that cannot be said, of the BEST of BEINGS, which one would be ashamed to ascribe to the *worst*, and to call that a *natural* evil, which arises out of the *human heart* alone, is a want of judgment and of reason. The origin of wars proceeds from the ignorant ambition of *rulers*, forgetful of the *people's* good.

In the natural world, our bountiful CREATOR *hath formed different* SOILS, *and appointed different* CLIMATES, *whereby the inhabitants of different countries may supply each other with their respective fruits aud products, so that by exciting a reciprocal industry, they may carry on an intercourse mutually beneficial, and universally benevolent.*

Nay more, even where there is no remarkable difference of soil or of climates, we find a great difference of TALENTS; and, if I may be allowed the expression, a wonderful variety of strata in the human mind.—Thus, for example, the alteration of latitude between *Norwich* and *Manchester*, and the variation of soil, are not worth naming; moreover, the materials made use of in both places, wool, flax, and silk, are just the same; yet *so different* are the productions of their respective looms, that countries which are thousands of miles apart could hardly exhibit a greater contrast.—Now had *Norwich* and *Manchester* been the capitals of two neighbouring kingdoms, instead of *love* and *union*, we should have heard of nothing but *jealousies* and *wars*; each would have prognosticated, that the flourishing state of the one portended the downfal of the other; each would have had their respective complaints, uttered in the most doleful accents, concerning their own loss of trade, and of the formidable progress of their rivals; and, if the respective governments were in any degree popular, *each* would have had a set of *patriots* and *orators* closing their inflammatory harangues with a "DELENDA EST CARTHAGO."—"We must destroy our "rivals, our competitors and commercial enemies, or be destroyed by them; for our interests are opposite, and can never coincide."—And yet, notwithstanding all these *canting phrases*, it is as clear as the meridian sun, that in case these cities had belonged to different kingdoms (*France* and *England* for example) there would then have been no more need for either of them to have gone to war than there is at present.

In short, if mankind would but open their eyes, they might plainly see, that there is no one argument for inducing different nations to fight for the sake of trade, but which would equally oblige every country, town, village, nay, and every shop among ourselves, to be engaged in civil and intestine wars for the same end: nor, on the contrary, is there any motive of interest or advantage that can be urged for restraining the parts of the same government from these unnatural and foolish contests, but which would conclude equally strong against separate and independent nations making war with each other on the like pretext.

Shall

Shall she *not mourn* the PEOPLE's griefs,
Their dying sons, their weeping dames?—
Nor shall she ev'n with *tearless* eye
Yon gallant Navy e'er descry
Returning o'er the western flood,
For, ah! the laurel's greenest bough
That ever crown'd *Victoria's* brow
Is surely ting'd with *blood!*

Though blaze the splendid fires around,
Though Arcs of Triumph proudly rise,
Though Fame her loudest Pæan sound,
And notes of Conquest rend the skies,—
Alas! in some sequester'd cell
Her slaughter'd lover's funeral knell
In every shout the *Virgin* hears!
And as the strain of victory flows,
More swell the widow'd *Matron's* woes,
And faster fall her tears!

Though from this cliff while Fancy views
Yon squadrons darken half the main,
She dress in Glory's brightest hues
The pride of Albion's naval reign,
Yet, as REFLECTION'S MIRROR shows
Th' *attendant scene* of *death* and *woes*,
Th' exulting hopes of conquest cease,
She turns from *War*'s delusive form
To deprecate th' impending storm,
And breathes her vows for PEACE. †

HENRY JAMES PYE, *Poet Laureat.*

Moreover, the instinct of curiosity, and the thirst of novelty, which are so universally implanted in human nature, whereby various nations and different people so ardently wish to be customers to each other, is another proof that the curious manufactures of one nation will never want a vent among the richer inhabitants of another, provided they are reasonably *cheap* and *good*; so that the richer one nation is, the more it has to spare, and the more it will certainly lay out on the produce and manufactures of its ingenious neighbour.—Do you object to this? *Do you envy the wealth, or repine at the prosperity, of the nations around you?*—If *you do,* consider what is *the consequence,* viz. that you *wish to keep a shop,* but *hope to have only* BEGGARS *for your customers.*

As things are thus constituted by GOD, *it is really astonishing to think with what applause and eclat the feats of conquerors, inhuman monsters! are transmitted down, in all the pomp of prose and verse, to distant generations: nay, let a prince but feed his subjects with the empty diet of military fame, it matters not what he does besides, in regard to themselves as well as others; for the lives and liberties, and every thing that can render society a blessing, are willingly offered up as a sacrifice to this idol,* GLORY.—Were the facts to be examined into, you would find, perhaps without *a single exception,* that the *greatest conquerors abroad* have proved the *heaviest tyrants at home.*—However, as *victory,* like charity, covereth a multitude of sins, thus it comes to pass that reasonable beings will be content to be *slaves themselves,* provided they may *enslave others*; and while the people can look up to the glorious *hero* on the throne, they will be *dazzled* with the splendour that surrounds *him,* and forget the deeds of the *oppressor. Vide our* PHILOSOPHY OF POLITICS, chapter on War, vol. ii. p. 83.

† How sweetly does the poet endeavour to bring *kings* and *people* to a right knowledge respecting *War,* depicting the miseries it creates in language that cannot fail to move the heart, and at the moment of expected *victory* deplores its *bloody* trophies, and "*breathes the vow for* PEACE!" Yet I hope it will be understood, that neither the Poet Laureat, nor myself, wish to inculcate *pusillanimity.* "Dulce et decorum est pro patriâ mori."—We deplore only that *ambition* and *folly* in *rulers* which create *Wars,* from *jealousy of trade,* or for *territorial aggrandisement!*

THE

NOBLE

SENTIMENTS

OF

HER MOST GRACIOUS MAJESTY

CHARLOTTE,

QUEEN OF THE UNITED KINGDOM,

AGAINST

W A R.

From our Queen, centered upon the throne, are seen to radiate every heavenly virtue. How pathetically and eloquently does this virtuous princess, equally adored *now* as *then*, plead for her Native Land, to the King of Prussia, forcibly depicting to him the real horrors of War!

To his Majesty the King of Prussia.

May it please your MAJESTY,

I AM at a loss, whether I should congratulate, or condole with you, on your late *victory*; since the same success, which hath covered you with laurels, has overspread the country of *Mecklenburgh* with desolation. I know, Sire, that it seems unbecoming my Sex, in this age of vicious refinement, to feel for one's country, to lament the *horrors* of war, even to wish for the return of *peace*. I know you may think it more properly *my* province to study the arts of pleasing, or to inspect subjects of a more domestic nature. But however unbecoming it may be in *me*, I cannot resist the desire of interceding for this *unhappy people*.

It was but a few years ago, that this territory wore the most pleasing appearance; the country was cultivated, the peasant looked cheerful, and the towns abounded with riches and festivity. What an alteration, at present, from so charming a scene! I am not expert at description, nor can my fancy add any horrors to the picture; but these are such that even *conquerors themselves* would weep at the hideous prospects now before me!

The whole country (my dear country!) lies one frightful waste, presenting only objects to excite terror, pity, and despair. The business of the husbandman and the shepherd are quite discontinued. The husbandman and the shepherd are become soldiers themselves, and help to

ravage the soil they formerly cultivated. The towns are inhabited only by old men, women, and children----perhaps here and there a warrior, by wounds or loss of blood rendered unfit for service, left at his door; his little children hang around, ask an history of every wound, and grow themselves soldiers before they find strength for the field. But this were nothing, did we not feel the alternate insolence of either army, as it happens to advance or retreat in pursuing the operations of the campaigns. It is impossible to express the confusion which even those who call themselves our friends create. Even those from whom we might expect redress, oppress us with new calamities. From your high station, therefore, it is that we expect relief. To you, even women and children may complain, whose *humanity* stoops to the meanest petition, and whose *power* is capable of repressing the greatest injustice.

CHARLOTTE-SOPHIA,
Princess of Mecklenburgh-Strelitz.

The same just and benevolent Sentiments, which do honour to both the *head* and *heart*, to suit this work, are here clothed in a poetic dress.

TO FREDERICK THE GREAT, KING OF PRUSSIA.

While conquest seats YOU on the throne of fame,
And martial deeds immortalize your name,
On burnish'd arms, while glory brightly beams,
And fields victorious fill the monarch's dreams;
Trembling I view whence all that glory springs
Which crowns the awful brows of hero-kings;
Shock'd I behold the source whence dart those rays
Which shine on victors, and round conqu'rors blaze;
And fondly anxious, *praises* to bestow,
Reluctant swell the stream of *general woe*;
For e'en those laurels which your brows entwine,
Your triumphs crown, and bid your conquests shine,
Meant as immortal trophies to adorn,
Were from my country's bleeding bowels torn.
While, in what's truly brave, and greatly bold,
You outstrip heroes dignify'd of old;
My native *Mecklenburgh*, a prey to arms,
In desolation finds her ruin'd charms:
No more her plains their plenteous verdure yield,
No longer Ceres decks the golden field;
Through all her bounds dark scenes of horror rise,
Despair's loud yell, and Sorrow's frantic cries.

Conscious I am, great Sire, the patriot's theme
In my weak sex may unbecoming seem;
For, in an age so viciously refin'd,
By folly blinded, to caprice resign'd,
Perhaps you deem the very name of arms,
The thought of rapine, and of war's alarms,
Of slaughter by contending armies made,
Of burnish'd swords in deathful feats display'd,
Of mourning widows, and of bleeding swains,
Of burning towns, and desolated plains,—
Perhaps you deem such themes were ne'er design'd
To occupy the tender female mind;
Ordain'd to study only how to please,
And court the prospect of domestic ease:
Yet oh! forgive, while patriot virtue fires,
And soft humanity the strain inspires:
Forgive, great Sire, if *sorrowing* I unfold
Each *dismal scene* which my sad eyes behold;
And, while the natives of my country bleed,
The cause of suff'ring worth I dare to plead.
The radiant sun rolls on its swift career,
But not remote beam'd forth that joyful year,
When o'er proud *Mecklenburgh*'s belov'd domain
Fair plenty smil'd on every fertile plain:
The placid months serenely fled away,
The fields were fruitful, and the groves were gay.
But now, alas! my streaming *sorrows* flow,
Now, my dear country is one scene of woe;
Depopulation makes a frightful void,
The peasant flies, or lingering is destroy'd:
Where'er, in anguish, roll my aching eyes,
All the dire horrors of the war arise;
The devastations of the martial train,
With streaming gore empurple ev'ry plain:
With native blood the swollen rivers glide,
And to the ocean roll a crimson tide;
While into camps the fertile fields are made,
And thickest woods can scarce from danger shade;
Woods where afflicted families retire,
To shun the slaught'ring sword or raging fire.
In vain they seek their weary eyes to close;
Or if exhausted strength induce repose,
Oppressive terrors agitate the soul,
And fancy hears the battle's thunder roll.
A famish'd child lifts up its streaming eyes,
"Food, food! I perish!" the pale infant cries;
The fainting mother ready to expire,
Replies with tears, and supplicates the sire:
The sire, unable to afford relief,
Stands a distracted monument of grief;
With blended sighs they mourn their hapless doom,
And envy their loved babe the shelt'ring tomb.

Now

Now wing'd by fear no husbandman remains,
By culture to restore the ravaged plains;
No gentle shepherd tends his fleecy care,
Both rush to war, the rage of battle dare;
And soldiers grown, oh! dire reverse of fate,
Destroy those fields their labours till'd so late!
With anguish'd hearts the women sit and wail,
As fears for husbands, or for sons prevail:
Perchance a warrior here and there is found,
Debarr'd the field by many a rankling wound;
Round him the curious children fondly swarm,
Hang on his tongue, and at his tale grow warm;
The hist'ry of each aching wound desire,
Devour each word, and catch congenial fire;
And while the hero, in impressive strain,
Recites the wonders of the bloody plain,
The steed's loud neighing, and the clank of arms,
The thund'ring drum that beats to war's alarms,
The clanging trumpet and the cannon's roar,
The dying groans, and fields of streaming gore,
The little audience high erect their crests,
While martial ardours warm their glowing breasts.
To us our friends, as fatal as our foes,
These also swell the torrent of our woes;
Advancing or retreating squadrons spread
Unbounded ravage, where their footsteps tread.
To YOU, great Sire, we make our fond appeal,
Whose justice only can our suff'rings heal;
To YOU e'en helpless females may complain,
Nor shed their tears, nor plead their cause in vain;
And trembling babes, midst many a heart-felt sigh,
With confidencc lift up th' imploring eye.
To YOU whose kind humanity stoops down,
From all the dazzling grandeur of a crown,
To shield the peasant in his lowly shed,
To raise misfortune from her painful bed,
To guard the meanest who for justice press,
And grant the humblest supplicant redress,
To YOU a nation's pray'rs united rise;
Act like the great vice-gerent of the skies;
Relieve our suff'rings, WAR's dire rage restrain,
And o'er our grateful hearts for ever reign.

ADDRESS TO VENUS AND CUPID.

COME, gentle VENUS! and assuage
A warring world, a bleeding age;
For nature lives beneath thy ray,
The wintry tempests haste away,
A lucid calm invests the sea,
Thy native deep is full of thee;
And flowering earth, where'er you fly,
Is all o'er spring, all sun the sky.
A genial spirit warms the breeze;
Unseen, amid the blooming trees,
The feather'd lovers tune their throat,
The desart growls a soften'd note,
Glad o'er the meads the cattle bound,
And Love and Harmony go round.
But chief into the human heart
You strike the dear delicious dart;
You teach us pleasing pangs to know,
To languish in luxurious woe,
To feel the generous passions rise,
Grow good by gazing, mild by sighs;
Each happy moment to improve,
And fill the happy year with Love.
Come, thou delight of heaven and earth!
To whom all creatures owe their birth;
Oh come, sweet-smiling! tender, come!
And yet prevent man's wretched doom.
For long the furious *God of War*
Has crush'd him with his iron car,
Has rag'd along the smiling plains,
Has bathed them with his cruel stains,
Has fixed the youth in torpid sleep,
And made the widow'd virgin weep.
Let *Mars* now feel thy wonted charms;
Oh take him to thy twining arms!
And while thy bosom heaves to his,
While deep he prints the humid kiss,
Ah then! his stormy heart controul,
And sigh thyself into his soul.
Thy son too, CUPID, we implore,
To leave the green Idalian shore.
Be he, sweet God! our only foe;
Long let him draw the twanging bow,
Transfix us with his golden darts,
Pour all his quiver on our hearts,
With gentler anguish make us sigh,
And teach us sweeter deaths to die.

ON THE

HAPPY RETURN

OF

PEACE.*

CURST be AMBITION! to its lures we owe
The greatest ills that mortals bear below;
Curst by the *maid* torn from her lover's side,
By the pale *widow* curst, too short a bride;
By *mothers* curst, when floods of tears they shed,
And scatter useless ROSES on the dead.
Curst by the *hind*, when to the spoils he yields
His year's whole sweat, and vainly ripen'd fields.
E'en by the *christian* curst, whose mind can glow,
And kindly feel for universal woe.—
But hark! I hear more friendly shouts resound,
And social clarions mix their sprightly sound;
Sweet-smiling PEACE descends from heav'n above,
Creating *joy*, with *harmony*, and *love*.
The British flags are furl'd, the troops disband,
And scatter'd *armies* seek their native land;
The raptur'd *mother* hails her son's return;
The love-worn *maiden* ceases now to mourn,
And in ecstatic trance the lovers burn;
The soft'ning *arts* now rear their drooping head;
No longer grieves the country for its *dead*;
The *hind* in comfort tills his native soil,
And the glad earth repays his active toil;
Now flocks ascend the breach without a wound,
Or crop the bastion, turn'd to fruitful ground,
While *shepherds* sleep, along the rampart laid,
Or pipe beneath the formidable shade.—
The alter'd scene now sooths my soul to rest,
And wears each dreadful image from the breast.

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* Alluding to the Peace made by the illustrious ADDINGTON, which, it is hoped, will prove *permanent*, for the happiness of present and future generations.

Caldwall sculp.

A Group of Carnations.

A GROUP OF CARNATIONS.

THE *Carnation*, so deservedly esteemed both for its superior beauty and rich spicy odour,* must certainly have been unknown to the ancients, or it would have been described by naturalists as the rival of the Rose, and as such sung by poets. In its wild state it has five small red petals, and attracts no notice from its beauty, nor has it in that state any scent. So the Eastern Tulip, in its wild state, is of one uniform red. Art accomplishes all the rest. Then it is this Flower deserves the appellation given it by botanists, DIANTHUS, the *Flower of Jove.*† Some have affected to despise the Florist's care, and hence these beautiful nurselings are denominated by them *Monsters,*‡ because the petals are augmented, as in the double Rose, at the expense

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* In fair *Italia's* bosom born,
DIANTHUS spreads his fringed ray;
And glowing 'mid the purpled morn,
Adds fragrance to the new-born day.

Oft by some mould'ring time-worn tower
Or classic stream *he* loves to rove,
Where dancing nymphs and satyrs blithe
Once listen'd to the notes of love.

Sweet flower, beneath thy natal sky
No fav'ring smiles [a] thy scents invite;
To Britain's worthier region fly,
And "paint her meadows with delight."

SHAW.

[a] The modern Italians, from whatever cause, are said to hold all perfumes, even those of Flowers, in aversion; perhaps from a dread of some subtle poison being thus administered, of which numerous (though not very credible) instances occur in the *tales of other times*:—40,000 persons, in the period of the Roman republic, are recorded in one year as having perished by poison. Vide my Philosophy of Politics, vol. i. p. 274.

† From Διος, of Jove, ανθος, the flower.

‡ Linnæus, who terms such flowers *Monsters*, thus deridingly describes the Florist. "Such, by an over-great study and assiduous inspection, have discovered such amazing wonders in flowers, as no man, the most clear-sighted in the world, could ever discern, but those who are versed in this study. The grand objects of their attention are the most beautiful flowers, such as Tulips, Hyacinths, Anemonies, Ranunculuses, Pinks, Carnations, Auriculas, and Polyanthuses. To the hidden varieties of these flowers they have given such pompous names as excite wonder and astonishment, and are really ridiculous. These men cultivate a science peculiar to themselves, the mysteries of which are only known to the adepts; nor can such knowledge be worth the attention of the botanist; *wherefore let no sound botanist ever enter into their societies.*"

Some apology, however, may be made for the *Florist*. "Not he alone is to be esteemed a benefactor to mankind who makes a useful discovery, but he also who can point out and recommend an innocent pleasure. Of this kind are the pleasures arising from the observation of Nature, highly agreeable to every taste uncorrupted by vicious indulgence.

"There will always be many in a rich and civilized country who, as they are born to the enjoyment of competent estates, engage not in business civil or professional; but the restless mind must either find or make an object; pleasure, therefore, becomes to the unemployed a serious pursuit. Whatever is its essence, and whatever the declaimer may urge against it, pleasure will be sought by all who possess the liberty of election. It becomes then incumbent on the moralist not only to urge the performance of duty, but to exhibit objects that please, without enervating the mind, and gratify without corrupting the principles.

"Rural scenes, of almost every kind, are delightful to the mind of man. The verdant plain, the flowery mead, the meandering stream, the playful lamb, the warbling of birds, are all capable of exciting emotions gently agreeable. But the misfortune is, that the greater part are hurried on in the career of life with too great rapidity to be able to give attention to that which solicits no passion. The darkest habitation in the dirtiest street of the metropolis, where money can be earned, has greater charms with many than the groves of Hagley.

"Yet the patron of refined pleasure, the elegant Epicurus, fixed the seat of his enjoyment in a garden. He thought a tranquil spot, furnished with the united sweets of art and nature, the best adapted to delicate repose. And even the severer philosophers of antiquity were wont to discourse under the shade of a spreading tree, in some cultivated plantation.

"It is obvious, on intuition, that Nature often intended solely to please the eye in her vegetable productions. She decorates the floweret that springs beneath our feet in all the perfection of external beauty. She has clothed the garden with a constant succession of various hues; even the leaves of the tree undergo a pleasing vicissitude. The fresh verdure they exhibit in the spring, the various shades they assume in summer, the yellow and russet tinge of autumn, and the nakedness of winter, afford a constant pleasure to a fine imagination. From the snowdrop to the moss-rose, the flower-garden displays an infinite variety of shape and colour. The taste of the florist has been ridiculed

of the *Stamina,* and often of the *Pistilla.* SHAKSPEARE notices this strange effect produced by art.

PER. Sir, the year is growing ancient,
Not yet on summer's death, nor on the birth
Of trembling winter; *the fairest flowers o' th' season*
Are our Carnations, and streak'd Gilly-flowers,
Which some call Nature's *Bastards:*—of that kind
Our rustic garden's barren, and I care not
To get slips of them.

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as trifling, yet surely without reason. Did Nature bring forth the Tulip and the Hyacinth, the Rose and the Carnation, to be neglected by the haughty pretender to superior reason? To omit a single social duty for the cultivation of a Polyanthus were ridiculous as well as criminal; but to pass by the beauties lavished before us, without observing them, is no less ingratitude than stupidity. A bad heart finds little amusement but in a communication with the active world, where scope is given for the indulgence of malignant passions; but an amiable disposition is commonly known by a taste for the beauties of the vegetable creation." KNOX.

Herbs and flowers may be regarded by some persons as objects of inferior consideration in philosophy; but every thing must be great which hath God for its author. To him all the parts of Nature are equally related. The flowers of the earth can raise our thoughts up to the Creator of the world as effectually as the stars of heaven; and till we make this use of both, we cannot be said to think properly of either. The contemplation of Nature should always be seasoned with a mixture of devotion, the highest faculty of the human mind, by which alone contemplation is improved, and dignified, and directed to its proper object.—*With this devotion, the study of flowers* seems to restore man in his fallen state to a participation of that felicity which he enjoyed while innocent in Paradise."—Nothing indeed proves more satisfactorily a benevolent DEITY than the *variety* HE hath established in flowers, even amongst the same species. What a blaze of light bursts in upon the inquiring mind respecting the *intentions* of this DEITY! A full proof of the existence, wisdom, and never-ceasing agency of a presiding Power—*kind* and *good*—an ALMIGHTY POWER!—Our inimitable HARVEY bursts out into these rapturous expressions at the sight of a flower garden:

"What *colours*, what charming colours, are here! these, so nobly bold; and those, so delicately languid. What a glow is enkindled in some! what a gloss shines upon others! In one, methinks, I see the ruby with her bleeding radiance; in another the sapphire, with her sky-tinctured blue; in all, such an exquisite richness of dyes, as no other set of paintings in the universe can boast.—With what a masterly skill is every one of the varying tints disposed! Here, they seem to be thrown on with an easy dash of security and freedom; there, they are adjusted by the nicest touches of art and accuracy. Those which form the ground are always so judiciously chosen as to heighten the lustre of the superadded figures, while the verdure of the impalement, or the shadings of the foliage, impart new liveliness to the whole. Indeed, whether they are blended or arranged, softened or contrasted, they are manifestly under the conduct of a taste that never mistakes, a felicity that never falls short of the very perfection of elegance.—Fine, inimitably fine, is the texture of the web on which these shining treasures are displayed. What are the labours of the Persian looms, of the boasted commodities of Brussels, compared with these curious manufactures of Nature? Compared with these, the most admired chintzes lose their reputation; even superfine cambrics appear coarse as canvas in their presence.

"What an inchanting situation is this! One can scarce be melancholy within the atmosphere of flowers. Such lively *hues*, and delicious *odours*, not only address themselves agreeably to the senses, but touch, with a surprising delicacy, the sweetest movements of the mind.

"How often have I felt them dissipate the gloom of thought, and transfuse a sudden gaiety through the dejected spirit! I cannot wonder that *kings* descend from their thrones, to walk amidst blooming ivory and gold; or retire from the most sumptuous feast, to be recreated with the more refined sweets of the garden. I cannot wonder that *queens* forego, for a while, the compliments of a nation, to receive the tribute of the parterre; or withdraw from all the glitter of a court, to be attended with the more splendid equipage of a bed of flowers.

"What a surprising *variety* is observable among the flowery tribes! how has the bountiful hand of PROVIDENCE diversified these nicest pieces of his workmanship! added the charms of an endless novelty to all their other perfections!—A constant uniformity would soon render the entertainment tiresome, or insipid; therefore every species is formed on a separate plan, and exhibits something entirely new. The fashion spreads not from family to family; but every one has a mode of its own, which is truly original. The most cursory glance perceives an apparent difference, as well as a peculiar delicacy, in the airs and habits, the attitude and lineaments of every distinct class.

"Some rear their heads with a majestic mien, and overlook, like sovereigns or nobles, the whole parterre. Others seem more moderate in their aims, and advance only to the middle stations; a genius turned for heraldry might term them the gentry of the border. While others, free from all aspiring views, creep unambitiously on the ground, and look like the commonalty of the kind.—Some are intersected with elegant stripes, or studded with radiant spots. Some affect to be genteelly powdered, or neatly fringed; while others are plain in their aspect, unaffected in their dress, and content to please with a naked simplicity. Some assume the monarch's purple, some look most becoming in the virgin's white; but black, doleful black, has no admittance into the wardrobe of Nature. The weeds of mourning would be a manifest indecorum, when Summer holds an universal festival. She would now inspire none but delightful ideas; and therefore always makes her appearance in some amiable suit. Here stands a warrior, clad with crimson; there sits a magistrate, robed in scarlet; and yonder struts a pretty fellow, that seems to have dipped his plumes in the rainbow, and glitters in all the gay colours of that resplendent arch. Some rise into a curious cup, or fall into a set of beautiful bells; some spread themselves in a swelling tuft, or crowd into a delicious cluster. In some, the predominant stain softens, by the gentlest diminutions, till it has even stole away from itself. The eye is amused at the agreeable delusion, and we wonder to find ourselves insensibly decoyed into a quite different lustre. In others, you would think the fine tinges were emulous of pre-eminence. Disdaining to mingle, they confront one another, with the resolution of rivals, determined to dispute the prize of beauty; while each is improved, by the opposition, into the highest vivacity of complexion.

"How manifold are thy works, O LORD!" multiplied even to a prodigy: yet "in wisdom," consummate wisdom, "hast thou made them all." How I admire the *vastness* of the *contrivance*, and the *exactness* of the *execution!* Man, feeble man, with difficulty accomplishes a single work. Hardly, and after many efforts, does he arrive at a tolerable imitation of some one production of Nature. But the ALMIGHTY ARTIST spoke millions of substances into instantaneous being; the whole collection wonderfully various, and each individual completely *perfect.*"

POL.

Pol. Wherefore, gentle maiden,
Do you neglect them?
Per. For I have heard it said,
There is an art, which in their *piedness* shares
With great creating Nature.
Pol. Say, there be:
Yet Nature is perverted by no mean,
For Nature makes that mean: so, over that *Art*,
Which Nature makes; you see, sweet maid, we marry
A gentle scyon to the wildest stock,
And make conceive a bark of baser kind
A bud of nobler race. *This is an Art*
Which does mend Nature, change it rather, but
The Art itself is Nature. ‖

The Florist, in fact, raises this fine assemblage of plants from seed, and the botanist should excuse him his care, when he can draw from his labours the strongest arguments in favour of the sexes of plants.

"This admirable flower is of all others the most delightful, as well for its agreeable scent as for its beautiful colours. The varieties of it are hardly to be numbered, every year producing new sorts raised from seed. Some of the choicest kinds are kept up by slips, layers, or cuttings, but no seeds are to be obtained from these, for, after a few years propagation in this way, they indeed flower, yet, even if a pistillum be formed, and any seeds are produced, these are always found to be abortive.§ Most of the other double flowers, such as have increased corollas, are

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‖ "I am persuaded," says Linnæus, in his *Sponsalia Plantarum*, "from many considerations, that those numerous and most valuable varieties of plants, which are daily seen adorning our gardens, or are used for culinary purposes, have been produced by the intermixture of species; for I cannot give my assent to the opinion of those who imagine *all varieties* to have been occasioned by a change of soil. If this were the case, the plants would return to their original form, provided they were removed to their original situation." The following is a curious anecdote, recorded by Ray, which confirms this doctrine.

"Baal, a gardener at Brentford, having cultivated a remarkably fine cabbage, sold a large quantity of the seeds to several gardeners about the suburbs of London. They committed these to the ground after the usual manner, but instead of the sort Baal had made them believe would spring up, they proved to be chiefly the *Brassica Longifolia* instead of the *Florida*. His incensed customers in a body instantly commenced in Westminster-hall a prosecution against him. The unfortunate man being unable to prove his innocence before the judges, the court found him guilty of fraud, and he was condemned not only to restore the price given for the seeds, but was likewise obliged to pay each gardener for his loss of time, and for the ground that had been uselessly occupied. His character and circumstances were in consequence ruined; the robust health of the innocent man becoming gradually impaired, he paid an untimely debt to Nature. Had the judges been at all apprized of the sexual hypothesis, or had this honest man known, from careful observation, the use of the farina in rendering the pistillum productive, Baal would not have been found guilty of a crime, but the accident would have been attributed to the true cause, the fortuitous impregnation of the *Brassica Florida* by the farina of the *Brassica Longifolia* growing in its neighbourhood."

This fact is proved by Miller, the illustrious author of the *Gardener's Dictionary*, now rendered a work of the very first eminence by the learned and very valuable additions of Professor Martyn, in the last edition, which, to use the panegyric of Linnæus, "merits rather the appellation of a philosophic and botanical Dictionary for Botanists."

Miller planted out three distinct rows of cabbages. In the first row he put a dozen of *red cabbages*; in the second a dozen of *white*; and in the third a dozen of *savoys*. As soon as these had done flowering he cut them all down, save *one savoy*, the seeds of which he carefully preserved. These seeds produced him *red cabbages*, *white cabbages*, *savoys*, some *savoys with red ribs*, and in some a *mixture of all the three sorts in the same plant*. This is a curious botanical fact, which the truly ingenious Mr. Knight is now turning to a valuable account for the improvement of our apples and other fruits.

§ This doctrine is thus expressed by Dr. Darwin:

So grafted trees with shadowy summits rise,
Spread their fair blossoms, and perfume the skies;
Till *canker* taints the vegetable blood,
Mines round the bark, and feeds upon the wood.
So, years successive, from perennial roots
The wire or bulb with lessen'd vigour shoots,
Till *curled leaves* or *barren flowers* betray
A waning lineage, verging to decay;
Or till, *amended* by *connubial powers*,
Rise *seedling* progenies from SEXUAL FLOWERS.

also

also barren, for the organs for reproduction are lost in the multiplication of the petals. You must, therefore, select seed from a carnation raised itself from seed, not from layers, and from such also whose flowers shew a perfect pistillum. And as the dust of one flower will impregnate and enliven that of another, and from such couplings the seeds are so changed as to produce plants changing from the mother plant (as I have proved in my chapter on the Generation of Plants). This consideration leads me to advise the curious florists to plant of every sort of his best carnations in beds, on a line in the middle, and on each side of them to set at least two rows of *single ones* of *choice colours*, and among them also some plants of *Pinks* and *Sweet-williams*, which are of the same genus." Vide Bradley, Professor of Botany, on Gardening, p. 122, published in 1727.

By this latter part of the experiment FAIRCHILD produced his *Mule* Pink, which the eye at once discovers to be betwixt a Sweet-william and a Pink.

CARYO's sweet smile DIANTHUS proud admires,
And gazing burns with unallow'd desires;
With sighs and sorrows her compassion moves,
And wins the damsel to *illict loves*.
So, in her wane of beauty, NINON won
With fatal smiles her gay unconscious son—
Clasp'd in his arms, she own'd a mother's name,—
" Desist, rash youth! restrain your impious flame;
" First on that bed your infant-form was press'd,
" Born by my throes, and nurtur'd at my breast."—
Back as from death he sprung, with wild amaze
Fierce on the fair he fix'd his ardent gaze;
Dropp'd on one knee, his frantic arms outspread,
And stole a guilty glance towards the bed;
Then breath'd from quivering lips a whisper'd vow,
And bent on heaven his pale repentant brow;
" Thus, thus!" he cried, and plung'd the furious dart,
And life and love gush'd mingled from his heart.

DARWIN.

The " sound" botanist will also find no plant that can better illustrate the calyx.

He should indeed suffer each person to enjoy his own *peculiar* pleasure. There are some rigid men who even condemn this pursuit altogether, having not taste enough to relish the beauties of the creation. The poet thus reproves them:

Why brand *these pleasures* with the name
Of soft, unsocial toils, of indolence and shame?
Search but the garden, or the wood;
Let yon admir'd CARNATION own,
Not *all* was meant for *raiment* or for *food*,
Not all for *needful use* alone:
There, while the seeds of future blossoms dwell,
'Tis *colour'd* for the sight, *perfum'd* to please the smell,

Why

Why knows the *Nightingale* to sing?
Why flows the *Vine's nectareous juice?*
Why shines with paint the *Linnet's* wing?
For *sustenance* alone? for *use?*
For *preservation?* Every sphere
Shall bid fair PLEASURE's rightful claim appear.
And sure there seem of human kind
Some born to shun the solemn strife;
Some for amusive tasks design'd,
To *sooth* the *certain ills* of *life*;
Grace its *lone vales* with many a *budding rose,*
New founts of *bliss* disclose,
Call forth *refreshing shades,* and decorate *repose.*

SHENSTONE.

Florists distinguish Carnations into four divisions:

1. *Flakes,* of two colours only, and their stripes large, going quite through the petals.
2. *Painted Ladies,* having the petals of a red, or purple, on the upper part only, and the under side of a clear white.
3. *Bizarres,* flowers striped or variegated with three or four different shades of colour.
4. *Piquettes,* a white or yellow ground, edges toothed and spotted, or, to use the florist's expression, pounced, with scarlet, red, or purple.

In our Plate of these Carnations * there are two purple *Flakes*; the upper is PALMER'S DUCHESS OF DORSET, and the lowest one PALMER'S DEFIANCE:----there are two scarlet *Bizarres*; that on the right is CAUSTIN'S BRITISH MONARCH, and the center one, a paler red, is MIDWINTER'S DUCHESS OF WURTEMBERG:----likewise there are two *Piquettes*; the red Piquette is DAVEY'S DEFIANCE, and the purple one the PRINCESS OF WALES.

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* These Carnations were all of them copied, of the exact size of Nature, from out of the choice collection of Mr. DAVEY, of the King's Road, Chelsea, as were the Tulips from that of Mr. MASON, certainly the first florists in the world, and gentlemen extremely desirous of giving every information and encouragement to the *Botanist.*

Henderson pinx. Lucas & Hopwood sculp.

A Group of Auriculas.

London Publish'd by Dr. Thornton May 1st 1803

Reinagle A.R.A. pinxt *Cockaps Eclipse* *Privateer* *Sutherland sculpt*

A Group of Auriculas.

London, Published by Dr Thornton, May 1, 1807.

A GROUP OF AURICULAS.

LINNÆUS makes the *Auricula* a species of Primula (PRIMULA AURICULA). Tournefort constitutes it into a separate genus. Being a native of the Alps, hence, in our Picture, it is seated near a chain of tremendous mountains. It is called by old Parkinson the *Mountain Cowslip*, also the *Bear's-ear*; the latter name from its leaves, which are fleshy, and round at top, being thought to resemble the ear of that animal. Its flowers are in an *umbel*, placed upon a fleshy, upright, *scape*; and Nature, in her bounty, has provided here a general *involucre*, which is a strong serrated leaf, often raised aloft like a *banner*, at the back of the flowers, so as to receive the shocks from the winds, which otherwise would dash them against the mountain's side. The proper calyx is tubular, and five-toothed, shorter than the corolla, which is also a tube gradually widening upwards, spreading out into an extensive border. This border has a round white circle surrounding the neck of the tube. In this circumstance all Auriculas agree. It is the other half of the border that constitutes the varieties in this flower. In some this is of an uniform purple, or yellow, the most common kind, and of little value; these sorts are by florists called *selfs*; the purple one in our Picture is *Redman's Metropolitan*, the yellow the *Egyptian*; sometimes this is not of one uniform colour, being found of a bright purple, with lighter dashes intermixed, and the edge of an apple green, when it has the appellation of *Cockup's Eclipse*, from the florist who first raised it; and when this strikes into a deeper ground colour, almost inclining to black, with more of the green, and the edges more emarginate, the former being more completely circular, and this less so, it is called *Grimes's Privateer*.* In its wild state these flowers are much smaller, and have five stamina. The Auricula was cultivated in our gardens so early as 1597. It comes under Class V. PENTANDRIA, *Five Males*, Order MONOGYNIA, *One Female*, of LINNÆUS.

Queen of the snowy Alps, in glittering pride
She rears her palace on the mountain's side;
There, as bright sun-beams light her spangled throne,
Attendant *sylphs* the aerial Empress own,
Expand their purple plumes, and raised in air,
Wave their *green banners* to protect the fair.
Imperial Beauty with resistless sway
Tames the rude *bears*, and bids their tribes obey,
Roar round each crystall'd cliff and moss-girt plain,
And guard in shaggy troops her bright domain.
Delighted *Boreas* views her from afar,
And drives in stormy state his ebon car;
Low at her feet the boist'rous Monarch bows,
And breathes his passion 'mid descending snows,
While timid *Zephyr* flies through fields of air,
Scarce daring to approach the hill-encircled fair.

SHAW.

* For a plant to be *fine*, or a flower for Florists, the scape, or *leg*, must be strong, upright, and rise one half above the foliage; the peduncles, or *fingers*, must not be less than seven, and properly spread the flowers; the cluster, or *truss* of flowers, should be close and regular, forming together a kind of ball, and, though close and compacted, each flower should, as near as possible, be distinct from each other. With respect to the flowers themselves, the tube, or *cup*, should be lemon-coloured; the stamina, or *thrums*, strong, and numerous enough to fill properly the cup and conniving; the inner margin, or *eye*, a clear distinct white; external to this circle, *the ground colour*, rich and bold, the edge nearest the eye determinate, the outer part running into the edging, *pencilled into the lacing*, the green clear, somewhat emarginate, which part is called the *lacing*. These should be all proportionate, nearly equalling one another.

Reinagle pinxt.

Earlom sculpt.

Tulips

London, Published May 1.1798. by Dr. Thornton.

A GROUP OF TULIPS.

As each individual Tulip shews a marked *variety,* so when grouped together, you have a striking display of the wonderful power of the beneficent Creator, who has placed these beautiful objects before us, for our recreation, and admiration! Enveloped between two transparent skins is found the colouring ingredients, so admirably disposed in a pulpy body, constituting the interior structure of each petal! How much does the imitative power of painting fall short in trying to represent these ravishing beauties of the vegetable world!

.....For who indeed can paint
Like Nature? Can Imagination boast,
Amid his gay creation, hues like these?
And can he mix them with that matchless skill,
And lay them on so delicately fine,
And make these varied marks so just and true,
That each shall tell the name denoting
Its peculiar birth?

The most cursory glance may indeed shew us that *diversity* which Tulips exhibit: but it will require our *nearer approaches* to discover the *distinctions* in the *habits, attitude,* and *lineaments,* of the several species which have given occasion to the *appellations* invented by florists.

Most prominent in our group, you see a tulip, named after that unfortunate French monarch, Louis XVI, then in the meridian of his glory; and it rises above the rest with princely majesty, the *edges* of whose petals are stained with *black,* which is the true emblem of sorrow. It finely displays the six *Stamina* placed around the *Pistillum* in the centre and its three *interior,* and three *exterior* petals.*---The next Tulip in dignity has its six petals of a firmer structure, and is *bordered* with *dark purple,* so that the most rigid critic might excuse the fancy of the florist, who has named this flower after the man§ 'Justum et tenacem propositi.'—Beneath these is La Majestieuse, whose edges are clear, but it possesses an extensive *blue purple stripe* in the *centre* of each petal.---The *Carnation* Tulip is called by Botanists La Triomphe Royale, which for beauty of its pencilled stripes certainly triumphs over all the rest.---Beneath this is the Gloria Mundi, whose *yellow ground* is an emblem of sublunary perfection. Its decisive *dark purple lines* at the *edges,* or in the *centre* of the petals *at their top,* together with its stately position, sufficiently characterize this individual.---The two remaining Tulips have been newly raised by Davey and Mason, and were named by me, after two very distinguished patrons of this work, Her Grace the Duchess of Devonshire,‡ no less eminent for her fine sense and expressive beauty,---than Earl Spencer,‖ for his memorable conduct of our navy, which has eclipsed, under his administration, even the glory of our ancestors, which was *previously* imagined to exceed almost the bounds of human credibility.

* Hence it comes under the Class Hexandria, Order Monogynia; six males and one female.
§ GENERAL WASHINGTON.
‡ The Tulip on the top is the DUCHESS OF DEVONSHIRE, and has fine dashes of a *red purple* on a pale straw ground.
‖ This Tulip, the EARL SPENCER, is characterised by its *numerous* fine pencilled *purple stripes* throughout the petals.

P. S. Tulips with a *white* ground florists designate by the title of *Bybloemen,* and with a *yellow* ground by the name of *Bizarre.* So great once was the rage in Holland for Tulips, that the Burgomasters found it necessary to enact a law, that no one should give more than forty pounds for *a Tulip*! Even in England, at this time, the LOUIS sells for forty Guineas, and the WASHINGTON for ten!

TULIP ROOT.

As the juices of the Turnip are wholly exhausted in the formation of the stem, leaves, and flowers, of the plant, so annually does the tunicated *bulb* of the Tulip expend itself in the production of its flower, and the formation of other bulbs, which contain the Tulips for the succeeding years in Embryo. Only open one of these young bulbs in any month of Winter, and you will see in *Miniature* the perfect flower destined in future to charm the admiring eye. This curious fact has afforded scope to a great poet for one of the most brilliant compositions in the English language.

When o'er the cultur'd lawns and dreary wastes
Retiring Autumn flings her howling blasts,
Bends in tumultuous waves the struggling woods,
And show'rs their leafy honours on the floods,
In with'ring heaps collects the flowery spoil,
And each chill insect sinks beneath the soil:
Quick hears fair Tulipa the loud alarms,
And folds her *infant* closer in her arms;
Soft plays affection round her bosom's throne,
And guards its life, *forgetful of her own.*—
So wings the *wounded deer* her headlong flight,
Pierc'd by some ambush'd archer of the night,
Shoots to the woodlands with her bounding fawn,
And drops of blood bedew the conscious lawn;
There, hid in shades, she shuns the cheerful day,
Hangs o'er her young, and weeps her life away.—
So stood *Eliza* on the wood-crown'd height,
O'er Minden's plain, spectatress of the fight;
Sought with bold eye, amid the bloody strife,
Her dearer self, the partner of her life;
From hill to hill the rushing host pursu'd,
And view'd his banner, or believ'd she view'd.
Pleas'd with the distant roar with quicker tread,
Fast by her hand one lisping boy she led;
And one fair girl, amid the loud alarm,
Slept on her kerchief, cradled by her arm;
While round her brows bright beams of honour dart,
And love's warm eddies circle round her heart.
Near and more near th' intrepid beauty press'd,
Saw through the driving smoke his dancing crest;
Heard th' exulting shout, " they run! they run!"
" Great God!" she cried, " he's safe! the battle's won!"
A ball now hisses through the airy tides,
(Some fury wing'd it, and some dæmon guides,)
Parts the fine locks her graceful head that deck,
Wounds her fair ear, and sinks into her neck:
The red stream, issuing from her azure veins,
Dyes her white veil, her ivory bosom stains.
" Ah me!" she cried, and, sinking on the ground,
Kiss'd her dear babes, regardless of the wound:
" O cease not yet to beat, thou vital urn;
" Wait, gushing life, oh! wait my Love's return:
" Oh! spare, ye war-hounds, spare their tender age;
" On me, on me," she cried, " exhaust your rage."
Hoarse barks the wolf, the vulture screams from far,
The angel Pity shuns the walks of war.
Then with weak arms her weeping *babes* caress'd,
And, sighing, hid *them* in her *blood-stain'd vest.*

Darwin.

Henderson pinxt.

R. Cooper sculpt.

The Queen

London. Published 1st Jany 1807, by J. Thornton.

STRELITZIA REGINÆ,
OR, QUEEN-PLANT.

THIS is one of the many lovely productions imported from the Cape of Good Hope, introduced into our gardens by Sir JOSEPH BANKS, Bart. K.B. the illustrious and most indefatigable promoter of the science of Natural History. Its leaves are coriaceous and spoon-shaped, often undulated at the base, inwardly of a deep green, and outwardly beautifully glaucous. The flowers are of a bright orange, tripetalled, enclosed at first by two long membranous calyx leaves, which drop as the flower rises from the common spatha, and these appear in succession, each retiring backward, to give place to other flowers. These three petals of the corolla encompass the beautiful nectarium, which is diphyllous, that is, composed of two leaves, one shaped like an anchor exteriourly, and hollowed interiourly, inclosing in a groove the five stamina, remarkable for long anthers, through which duplicature also passes the style, whose triangular and pointed stigma, finally reaching beyond the bifid end of this part of the nectary, makes the anchor resemblance perfect. The other petal of the nectary is smaller, shaped like a cowl, and hooked. Nature here seems to aim at deception, the beaked spatha, upon its long and round stalk, or scape, gives the similitude of the head of some species of crane, and the flowers above feign its top-knot; and even the expert botanist at first sight might imagine that the purple nectary on one side was a stamen, with its barbed anther, and on the other the stigma, as in the orchis tribe: but upon dissection all this confusion vanishes, and it easily arranges under Class V. PENTANDRIA, Order I. MONOGYNIA, of Linnæus, each flower possessing five stamina, and one pistillum. We have been so fortunate as to be favoured with the following Verses on this Plant by the present *Poet Laureate.*

ON Afric's southern steep, where Gama's sail
To the tempestuous clime was first unfurl'd,
Courting with ample sweep the dangerous gale,
And op'd to Europe's sons the Eastern World,

Heroes, beyond the Demi-Gods of Greece,
By Jason led, and urg'd by Orpheus' lyre,
Seeking, through wilder seas a richer fleece,
While warlike Camoens* wak'd the epic wire.

Oft as the *Genius* of the stormy main
From the high promontory view'd the wave,
He saw with daring prow Britannia's train,
The angry winds and mountain surges brave,

GEORGE's parental sway and Albion's laws
Spreading where Ammon's empire never spread,
To Thames' blest stream her stores while Commerce draws
From Ganges' Bramin groves and Indus' bed:

Sudden, a buoyant *Vessel* meets his eyes,
Not launch'd by thirst of wealth, or hope of fame,
Science alone directs the bold emprise,
Her eye their cynosure, her smile their aim.

Her *favourite Votary* from the lap of ease,
From Pleasure's syren voice, and Fortune's store,
Steers by unpeopled coasts, through pathless seas,
The expanded Scenes of Nature to explore.

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* A famous Portuguese Poet, Author of the Lousiad.

Amid her shapes minute while others pry,
  Scanning the myriads on the herbs' green top,
Or mark intent, with microscopic eye,
  The monsters writhing in the liquid drop;

Advent'rous BANKS!* her bolder march pursues,
  Through the rude desert, and the billowy storm,
And 'mid the elemental conflict views
  The mighty wonders of her awful form.

Now 'mid the rigour of antarctic frost,
  Where the chill stream of life scarce keeps its way;
Now where the day-star on the sultry coast
  At noon-tide sheds th' insufferable ray;

Uncheck'd by danger, unsubdu'd by toil,
  He climbs where mountains rise on mountains roll'd,
Nor seeks the ores that glow beneath the soil,
  But "views the mine without a wish for gold."

His pride, on every land, in every clime,
  From the low shrub that clothes the arid plain,
To where the cedar waves her boughs sublime,
  Careful to trace the vegetable reign.

Crown of *his labours!* this *imperial flower*,
  Wafted from burning Afric's rugged scene,
'Neath Britain's better skies, in happier hour,
  Enjoys the patronage of Britain's QUEEN!

Grac'd by *her Name*,† its shining petals boast
  Above the rest to charm her favouring eyes,
Though Flora brings from every clime her host
  Of various odours and of varied dyes.‡

While Royal NYMPHS,§ fair as the Oreade race
  Who trod Eurota's brink, or Cynthus' brow,
Snatch from the wreck of time each fleeting grace,
  And bid its leaves with bloom *perennial* glow!

JAMES HENRY PYE.

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* The Right Honourable Sir JOSEPH BANKS went with Captain Cook round the world, in order to explore the scenes of nature, and has since flourished the Mæcenas of Botany and Natural History, which may be compared to a very tender plant, requiring the fostering aid of rich individuals, who employ their substance, not in pomp and vain amusements, but in the better pursuit of knowledge and an eternal fame. "I have often," says the elegant St. Pierre, "been astonished at our indifference respecting the applause of those who have introduced useful plants into their country, the sight or fruit of which are to this day so delightful. The names of these public benefactors are chiefly *unknown*, whilst their benefits pass from generation to generation: whereas those of the destroyers of the human race are handed down to us in every page, as if we took more account of our enemies than of our friends. The ancients did not, however act in this way. Plutarch observes that CERES and BACCHUS, who were mortals, attained to the rank of *Gods* from the universal and lasting blessings, which they procured to mankind: whereas HERCULES, THESEUS, and other Heroes, rose only to the rank of *demi-gods*, their good achievements being but of a temporary and partial nature. Pliny, the great Roman naturalist, informs us with no small degree of exultation, that of the eight species of cherries known in Italy in his time, one was styled *Plinian*, after the name of one of his relations, who had introduced it. The other species of this very fruit bore the names of the most illustrious families, being denominated the Julian, Apronian, Actian, and Cæcilian. He informs us, that it was Lucullus who, after the defeat of Mithridates, transported from the kingdom of Pontus the first Cherry Trees into Italy, from whence they were propagated in less than an hundred and twenty years over all Europe, England not excepted, then peopled by Barbarians. He also mentions Pompey and Vespasian as bearing in their triumphs the trees of the conquered countries, producing a remembrance of their victories more useful and durable than columns of brass or marble.

† This plant was named by Sir Joseph Banks in honour of Her present *Majesty*; who, together with the Princesses, cultivate the Science of Botany, and have attained a proficiency in this science, such as none, that I know of, in the inferior ranks have equalled.

‡ Virgins attendant on Diana.

§ There is not a plant in the Gardens of Kew (which contain all the choicest productions of the habitable globe) but has been either drawn by her gracious Majesty, or some of the Princesses, with a grace and skill which reflect on these personages the highest honour.

Reinagle pinxt Medland sculpt

The Aloe

AMERICAN ALOE,

OR,

AGAVE AMERICANA.

PARKINSON, who lived in 1640, mentions the ALOE as being brought from South America into Spain. In 1690, the Aloe is represented to have flowered at Lambeth, and two other plants in 1714, at Hampton Court Palace. The Aloe from which our representation was taken flowered in the month of September, 1790, at Smith's nursery, at Dalston, near Hackney. It was supposed to be about 70 years old, at which time, it displayed its *scape,* or trunk, arising from the center of the leaves, increasing with astonishing rapidity, until it reached nearly the height of 30 feet, resembling the mast of a ship, and there projected from its summit, at proportionate distances, 13 great *branches,* at each of whose extremities were found from 80 to 100 *flowers,* on proper *peduncles,* or flower-stalks, of different lengths, that each flower might have its due position as to light and heat, exciting in each beholder the idea of a vast chandelier. Had these flowers possessed the brilliancy of the Cereus, or Torch-Thistle, the resemblance indeed had been exact; although in themselves these ave but little claim to beauty, yet they exhibit remarkably well the *Pistillum* in the center of the flower, with the *Germen* inferior, that is beneath the *Corolla,* which is monopetalous, and sexfid, or divided into six *segments,* which are united at their base, and are of a greenish-yellow colour. Perhaps in warmer climates, where they are natives, these flowers might possess greater splendor, for lilies are styled by Linnæus the beaux and belles of the vegetable world. Or has NATURE rather chosen to give them the characters of funereal pomp, and therefore, rightly avoided all flippancy of colouring: for the AGAVE, or AMERICAN ALOE, when arrived at maturity, the scape, or stem, supporting the flowers, with the flowers themselves, derive their nourishment from the succulent leaves beneath, and as these advance those decay, and finally, the seeds being perfected, the stygma, style, corolla, and anthers, with their filaments, even the peduncles, and the scape, with its branches, perish.*

Having been favoured with the following complimentary lines on the representation given of the AGAVE, I am happy in having permission to lay them before my readers, who are the best judges, how far my humble endeavours may merit the Poet's commendation.

Nurs'd by a length of rolling years
Her stately form AGAVE rears,
Protracting still with wise delay,
The glory follow'd by decay,
Till, urg'd by time's resistless date,
Nobly *She* braves her destined fate,
And, conscious of the approaching doom,
Bursts forth impatient into bloom;
While, rich from all their curving stems,
Profusely shoot the golden gems;
Then fading 'midst admiring eyes,
The vegetable *Martyr* dies....
But, flow'ring thus at THY command,
Unchang'd her finish'd form shall stand;
And glorying in *perennial bloom,*
Shall smile through ages yet to come.

DR. SHAW.

* In the whole vegetable creation, there is not, perhaps, a plant more useful than the one we have described. As a defence it bids defiance to all intruders. Its leaves are employed as a thatch for houses; and properly managed, they will separate into fibres, which manufactured, can supply the place of hemp, flax, and cotton. The thorns, with which it is armed, serve for awls, or are made into nails, or pins, or needles. When rightly tapped, from three to four hundred gallons of sap may be extracted, which may be fermented into wine, or by simply boiling, reduced to a pulp, which serves all the purposes of soap. The ligneous stem is made use of by the carpenter, or for fewel; and the honey, which copiously distils from the flowers, when collected, is a most efficacious remedy in Asthma, and other disorders of the chest.

Henderson pinx.t

The Nodding Renealmia.

Caldwall sculp.t

London, Published Nov.r 1.1801, by D.r Thornton.

RENEALMIA NUTANS;

OR,

NODDING RENEALMIA.

THIS lovely Tree rises by the banks of rivers to the height of near twenty feet. Its *leaves* are alternate, strongly veined in the midrib exteriorly, but channelled in the inside. Like the INDIAN CANNA they constitute a part of the stalk. In its first stage the *buds* are enveloped within a leafy sheath, in the centre, supporting at its top a small leaf. The inside is of a beautiful crimson. The flower then shoots out a real *spatha* consisting of *two leaves* of a light green, elegantly running into crimson. These drop, when the *buds* all appear regularly disposed like the tiles of a house, of a beautiful white, tipt with crimson. They then appear glossy, and as if formed of the most perfect wax. From an absolute depending position, the flower-stalk gradually becomes nodding, the protecting leaf in the centre of the plant, withers, and from the bottom upwards the flowers take a contrary direction, the buds each turning back as they open, displaying a lovely assemblage of the most captivating flowers. To understand this flower well we must have recourse to the dissection. The *flowers* are not single but in pairs. The *first envelope* drops, when the advancing flower with a *bud* by its side appears. The *second envelope* is permanent, and wrinkled at the edges, half the length of the calyx, of a single piece with a division through its whole length, throughout of a bright crimson. This is seen along with the *Pistillum*, and is seated above the germen. The *Corolla* consists of a single fleshy petal divided into *three segments*, whereof the *upper segment*, resembles a hood, is twice the size of the *two under*, strongly emarginate, and deeply marked with crimson, whereas the *two under ones* are only half the size, less decidedly emarginate, with only a blush of red near their summits, divided by a line of white in the centre. Under the upper segment and attached to its base is the *filament*, ending in a *twin* or *double anther*. Here we remark a singular contrivance of Nature not to fail of her purpose, the *filament* is not only grooved, but there is an hollow in the centre of the *anther*, through which the *pistillum* passes, and growing longer than the stamen, the flower therefore depends. The *germen* beneath is slightly covered with down, and becomes an oblong *berry*, filled with seeds, which is preserved by the natives of Surinam, and is accounted a great delicacy. The Pistillum is also further fixed within the tube of the *Nectary*, resembling in form somewhat, that of the LIMODORON, or the petal of our DIGITALIS, but this is of a beautiful yellow, exquisitely streaked with red, and deeply tinged at its base, and this is continually distilling honey into the water, which creates a plaintive sound. It comes under the first CLASS, and first ORDER of LINNÆUS. We were favoured on this plant with the following exquisite lines, by a lady, whose fine poetry, I am happy to announce, will again appear in the course of this work.

Bright RENEALMIA! why in pensive grace
Bend o'er th' enamour'd stream thy lovely face?
Still to the wave thus bow thy glowing head,
And give thy image to its liquid bed.—
Less beauteous forms might view with conscious pride
Their hues reflected in the glassy tide;
Whilst *thou*, fair plant! but think'st thy fading near,
Droop'st in thy bloom, and shedd'st a *spicy tear*.

CORDELIA SHEELES.

The Flower by Reinagle, Moon-light by Pether. *Dunkarton sculp!*

The Night-Blowing Cereus.

London, Published 1. May 20. 1800, by P. Thornton.

NIGHT-BLOWING CEREUS,

OR,

CACTUS GRANDIFLORUS.

This plant is called by Linnæus *large-flowering Cactus,* on account of the comparative largeness of its flower, which, in its native country, Jamaica, is often more than a foot in diameter. It has the appellation also of *Night-blowing Cereus* from its opening its beautiful flowers after sun-set. Others have styled it the *Thorch Thistle,* from the armature about its pentangular, articulated, and climbing stem, which is leafless, succulent, and exhibits to the observer a figure equally grotesque as terrific, with flowers possessing actually the blazing appearance of a torch. I have sometimes seen in our hot-houses twenty or thirty of these flowers expanded in the same evening, emitting all the while a fine balsamic odour. The *calyx* is monophyllous, that is, consisting of one piece, which is deeply cleft into *segments,* called by botanists *laciniæ,* which are of a bright orange, and gradually diminish in size, becoming real *squamæ,* or scales, before they reach the *germen,* or *seed-vessel,* which is villous, or covered with numerous hairs. The *petals,* or flower-leaves of the *corolla,* are twenty in number, of a snowy whiteness, and arranged in tiers, are less pointed and concave than the *laciniæ,* having each extremity armed with a hook. These two expansions Linnæus figuratively calls the *nuptial bed.* From the *germen* at the bottom of the cup, arises a long tube, named by botanists the *style,* which terminates in a many-cleft *stigma.* These 3 parts form what is termed the *pistillum,* or female; around whom, in clusters, are the *stamina,* or males, composed of curvilinear *filaments,* crowned by their *antheræ.* These take their origin from the *calyx*; hence this plant comes under the Class Icosandria and Order Monogynia of Linnæus; and in the reformed System, Class Many Stamina, Order Filaments inserted into the Calyx. The *Cereus* is thus personified by Dr. Darwin in his *Loves of the Plants.*

Refulgent Cerea!...at the dusky hour
She seeks with pensive step the mountain-bower,
Bright as the blush of rising morn, and warms
The dull cold eye of midnight with her charms.
There to the skies she lifts her pencil'd brows,
Opes her fair lips, and breathes her virgin vows;
Eyes the white zenith; counts the suns that roll
Their distant fires, and blaze around the pole;
Or marks where Jove directs his glittering car
O'er Heaven's blue vault,...Herself a brighter star.
...There as soft zephyrs sweep with pausing airs
Thy snowy neck, and part thy shadowy hairs,
Sweet Maid of Night! to Cynthia's sober beams
Glows thy warm cheek, thy polish'd bosom gleams.
In crowds around thee gaze the admiring swains,
And guard in silence the enchanted plains;
Drop the still tear, or breathe the impassion'd sigh,
And drink inebriate rapture from thine eye.

Reinagle pinx.   Caldwall sculp.

The oblique-leaved Begonia.

London Published July [illegible] by Dr. Thornton

OBLIQUE-LEAVED BEGONIA,

OR,

BEGONIA OBLIQUA.

THE *oblique-leaved Begonia* is native of America, and was introduced into our hot-houses in the year 1777, by Dr. William Brown. This ornamental *shrub*, which rises from three to five feet, has numerous *leaves*, oblique, very smooth, laterally heart-shaped, waved, terminating acute. Its *flowers* afford a beautiful example of the *Sexes of Plants*, being *male* and *female*. The *male flowers* are discriminated by having only four *petals*, the upper and under are large, and the side petals small, all inversely cordate. In the centre of the flower are the numerous *stamina*. The *female flowers* are readily distinguished by having five, equal, lanceolate, *petals*, and a *tricuspidate pistillum* in the centre, with the *germen*, or seed-vessel, three-winged, inferior. NATURE, as if extremely solicitous for this enchanting work of her hand, has with tender care involved the embryo-flowers within a fine membranaceous *film*, or *bractea*, whose office of protection being served, drops, leaving the *central parts of the flowers* (or organs for reproduction) protected by their petals. The *male flowers* are in clusters, and occupy the superior part of the plant, for the more favourable dispersion of the fructifying *pollen*; while the *female flowers* are found beneath on dichotomous, or forked, *peduncles*, or stalks. The *Begonia* comes under the class MONŒCIA of Linnæus, order POLYANDRIA, and in the reformed system, Class MANY STAMINA, Order STAMEN-FLOWERS AND PISTIL-FLOWERS, ON THE SAME PLANT.

Where mid Columbia's gaily-tinctur'd skies
Her mountains blue in distant ranges rise,
And o'er the deepening shades and crystal springs,
Triumphant CUPID waves his purple wings,
The fair *Begonia* in her verdant bower
With conscious blushes owns his sovereign power:
Conceals her secret wish by coy disdain;
Yet eyes with look *oblique* some fav'rite swain:
Around her soft retreat, with joy elate,
Her numerous Lovers urge the gay debate,
Besiege the easy Fair with honey'd tales,
And tell their passion to the laughing Gales,
In frolic mirth their hopes and fears impart,
And win by turns her dissipated heart*....
So GALATEA from her shepherd swain
Tripp'd archly wanton o'er the flowery plain,
And laughing soft, with well-dissembled mien,
Flew to the shades, yet *wishing to be seen.*

DR. SHAW.

* Linnæus characterizes the Begonia thus, Folia cordata, altero latere obliterato. Having LEAVES *heart-shaped,* one *Lobe* nearly obliterated.

TO THE

BUTTERFLY.*

Ah, *happy insect,* free from care,
  Thou sportest in the flutt'ring breeze;
Wild as the fragrant mountain air,
  And playful as the waving trees.

When morning glimmers in the east,
  Thou wander'st o'er the dewy ground,
To sip the wild thyme's honey'd feast,
  Whose sweet breath scatters perfume round.

At noon thou suck'st the thistly mead,
  Where, with companions blythe and gay,
Upon the nectar'd flowers to feed,
  And sport the sultry hours away.

And when the sun's last beam is fled,
  And ev'ning sheds her pearly tears,
Thou sinkest to thy blossom'd bed,
  Slumb'ring again till morn appears.

Ah! *happy insect!* once like thine
  My heedless moments pass'd away;
No lengthen'd sigh of grief was mine:
  No tears then chill'd the glowing day.

I wander'd carelessly along
  The wild wood paths and shady bowers;
Gave to the murmuring winds my song,
  And gather'd wreaths of simple flowers.

Yes: then, gay Flutterer! like thee
  I danc'd where sportive Fancy led:—
Such Joy no longer smiles for me,
  E'en Hope's delusive dreams are fled.

S. E.

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* An *American* Butterfly is introduced into this Picture, to denote the Country of which the Begonia is native.

Reinagle pinx.t

Stadler sculp.t

Large Flowering Sensitive Plant

MIMOSA GRANDIFLORA;

OR,

LARGE-FLOWERING SENSITIVE PLANT.

This beautiful shrub is native of both the East and West Indies. It was introduced into our gardens in 1769, by Mr. Norman. It is found frequent in the mountains of Jamaica: hence one of the *aborigines* gazing at, and admiring its flowers. It sleeps at regular periods by closing its two corresponding leaflets together; and the flowers are so rapid in their growth, as to give to them also the appearance of spontaneous motion, Nature having well dissembled in this tribe of vegetables the high attributes of sensation, and of action. Growing to the size of a moderate tree, it is not armed with spines as many of its congeners, nor does it possess, like the *Mimosa Pudica* (the common Sensitive-Plant), the power of retracting its branches, so as to set the whole plant into general motion upon the rude approach of an invader. Distilling honey, it is the indulgent parent of the humming bird, and Nature has been so anxious for the preservation of this tribe, that besides multiplying the number of males (stamina) to one pistillum, or female, there are also several of its flowers which possess only a clustre of males. Hence it arranges in the Class XXIII. Polygamia. Order 1. Monœcia of Linnæus. It is thus personified by the late Dr. Darwin.

Fill'd with nice sense the chaste Mimosa stands,
From each rude touch withdraws her timid hands:
Oft, as light clouds o'erpass the summer glade,
Alarm'd she trembles at the moving shade;*
And feels, alive through all her tender form,
The whisper'd murmurs of the gathering storm;
Shuts her sweet eyelids to approaching night,
And hails with freshen'd charms the rising light.
Many a suitor woos the blushing maid.
Each swears by him she ne'er can be betray'd.
At last, she melts, and sighs, in verdant bow'rs,
And yields to Cupid's all triumphant pow'rs.—
So hapless *Desdemona*, fair and young,
Won by *Othello's* captivating tongue,
Hung o'er each strange and piteous tale, distrest,
Then sunk enamour'd on his sooty breast.

Darwin.

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* *Desdemona* is represented by Shakspeare, as one so chaste, "as to tremble even at the sight of her own shadow."

THE HUMMING-BIRD.*

GAY *Flutterer* of the *changeful plume,*
Born in *Columbian* wilds to stray,
Where Nature boasts perpetual bloom,
And smiles unconscious of decay,

Thy favour'd Race on lucid wing
From flower to flower, from grove to grove,
Like living gems are seen to spring,
And thro' the vivid landscape rove.

Where bending o'er the fragrant field,
Mimosas† quiv'ring branches sweep,
Deep in their downy nest conceal'd
Secure *thy* speckled infants sleep.

The sun *thy* friend, the flower *thy* bed,
Thy drink the nectar of its cell,
Luxuriant Nature smiling round,
What Muse *thy* varying joys can tell?

Had but ANACREON'S fate allow'd
Thy life and brighter charms to see,
His fam'd *Cicada* had been scorn'd,
And THOU his better deity!

SHAW.

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* There are several species of the *Humming Bird,* but the smallest variety is of the size of an hazel-nut. It is inconceivable how much these add to the high finishing and beauty of a fine western landscape. As soon as the sun is risen, the *Humming Birds,* of different kinds, are seen fluttering about the flowers, without ever lighting upon them. Their wings are in such rapid motion, that it is impossible to discern their precise colours, except their glittering. They are never still, but continually in motion, visiting flower after flower, and extracting its honey by a forky tongue, which they throw out like the proboscis of the bee, and commit their thefts in the gentlest manner. The constant division of the air creates a pleasing murmuring noise, and gives them their appellation. They sleep perched upon flowers, and hang their little nests in air, at the extremity of a small twig, lined with cotton, laying two eggs of a dazzling white, here and there speckled with yellow, and feed their young with the same sweet food as nourishes themselves.

† The Mimosas are the natural denizens of South America, although the *grandiflora* was first met with, I believe, in China.

Reinagle pinx.t

Caldwall sculp.t

The Blue Passion Flower.

London Published by J.t Thornton, Jan.y 1800.

PASSIFLORA CERULEA;

OR,

COMMON BLUE PASSION-FLOWER.

All the Passifloras claim the admiring eye, nor is this, though the most common, as thriving well out of doors, the least attractive. It was discovered in the Brazils, and its wonders were soon proclaimed to Christian kingdoms as representing the Passion of our Lord, whence its present appellation. The leaves were said exactly to resemble the *spear* that pierced our Saviour's side; the tendrils, the *cords* that bound his hands, or the *whips* that scourged him; the ten petals the *apostles*, Judas having betrayed, and Peter deserted; the pillar in the center was the *cross* or *tree*; the stamina, the *hammers*; the styles, the *nails*; the inner circle about the central pillar, the *crown of thorns*; the radiance, the *glory*; the white in the flower, the emblem of *purity*; and the blue, the type of *heaven*. On one of the species, the Passiflora alata, even *drops of blood* were seen upon the cross or tree. The flower was three days open, and then disappeared, denoting the *resurrection*. At last this wondrous flower was brought from the Brazils to Europe, and became a denizon of our gardens in the year 1699. We shall now examine this plant botanically. It is a climbing plant, remarkable for the growth of its shoots, rising in a few months above fifteen feet. The *stem* is round and fluted. At distinct distances proceed two *stipules* half-moon-shaped, on each side the *leaf*, which is palmate, that is, divided into five pointed lobes, and the lesser lobe is often sublobed. From out the axilla of the *petiolus* of the leaf proceed first the *flower*, and next a *tendril*. The first stage of the flower is protected by a *calyx*, which, as afterwards appearing somewhat remote from the flower, is called an *involucre*; this is composed of three intire orbicular *leaves*, paler than the common leaves, and half the size of the true *calyx*, which opens by degrees, displaying how curiously the organs for reproduction are enwrapped within its coverings. The calyx leaves are exteriorly green, and terminate with a *hook*, but as these leaves are united at their base, it is in fact monophyllous (a single leaf), divided into five *segments*. The *croolla* consists of five distinct fleshy *petals*. The *Nectary* beautifully radiates over these, and consists of two rows of *threads*, arising purple, then they possess a *circular band* of *white*, and terminate in *blue* interspersed with spots. There is next a ditch or hollow, in the middle of which arises an upright row of *short purple threads*; then appears a mound of coalesced *white threads*, which detach into short *purple threads* converging around the column. At the basis of this *column*, so protected, lies the *cell*, in which the honey is deposited, and a *gland* may be found in the center of this cell for the purpose of secreting the honey. There is also a *lid* affixed to the column, which covers the honey-cell. At a short distance up this column proceed the five *filaments*. These are broad, and become arched; and at each end is a *hook*, to which are attached the back of the oblong *anthers*, which occasions them very readily to vibrate at every breath of wind. The *anthers* on their under sides have two *bags* filled with *farina*, each of which opens in the center like a portmanteau. At the place of insertion of the five stamina is the *germen*, whence proceed the three *styles*, upright, as may be seen at the first opening of the flower, and then gradually depending more and more

for the purpose of impregnation. The *styles*, which are three, are dotted, and each terminate in a club-shaped yellow *stigma*. As soon as the intention of Nature is accomplished, all this clock-work of the flower ceases, and withers, except the *germen*, which increases, and forms into an oblong egg-shaped fruit, at first protected by the involucre, full of seeds inclosed in a subacid refreshing pulp. It comes under the CLASS XX. GYNANDRIA, and ORDER I. PENTANDRIA, of LINNÆUS.

The following fine lines are from the pen of an amiable and most beautiful young Lady.

BY Faith sublim'd, fair PASSIFLORA steers
Her Pilgrimage along this Vale of Tears,
The hopes of heaven *alone* her thoughts employ,
CHRIST is her glory, and the *cross her joy*.—
As the deep organ sounds the hallow'd strain
With solemn step proceeds the pious train.
In polish'd censers, wrought with wondrous care,
Five cherub boys the holy incense bear,
Three pious virgins form her holy train
Join in her pray'rs, and weep the "*Lamb that's slain.*"
With solemn step they tread the cloister's gloom,
Seek its deep shade, and commune with the tomb.
Hark! from the walls what *sacred anthem* sounds
With hymns of praise the vaulted roof resounds!

ANTHEM.

" He died! he died!—The Saviour of mankind,
" To save our souls, his spotless life resign'd;
" Yes! low, with humble grace, th' ALMIGHTY'S SON
" Bow'd to the cross, and cried, 'THY WILL BE DONE.'
" Astonished *Nature* trembled at the sight,
" And veil'd the guilty land in shades of night.
" In lofty mountains roll'd the mighty flood,
" *Earth* op'd her jaws, and drank his precious blood.
'*Redemption's ours*,' re-echoed through her *caves*;
" The dead are rous'd, and burst their silent *graves*;
" In hollow tones each from his vault replies,
'*We slept in peace secure with* GOD *to rise*.'
" *Death* vanquish'd fled, and sought his fell abode;
" *Sin* blush'd with shame, and hid her face from GOD,
" While *Mercy*, rising from the throne of grace,
" Pronounc'd free pardon to a sinful race."—

Oh! may that *cross* on which our SAVIOUR died
Subdue our passions, and our guilty pride!
That *we* amidst the general wreck shall rise
Preserv'd for purer worlds, and brighter skies,
Mount the bless'd seats of *Harmony* and *Love*,
Be crown'd with *bliss*, and live with GOD *above*.

FRANCES ARABELLA ROWDEN.

Henderson del.

Warner sculp.

The Winged Passion-Flower.

London. Published by D.r Thornton, June 1. 1802.

THE WINGED PASSION-FLOWER,

OR,

PASSIFLORA ALATA.

This beautiful tribe of plants we owe to the discovery of a new world. They grow luxuriant in various parts of that continent, but are chiefly to be met with in South America. *Murucuia* is the ancient American name; and this is retained by Tournefort, but is dropped by Linnæus. Elegantly hanging on its peduncle, or footstalk, the *Alata Passion-flower* far surpasses all its kindred both as to the elegance and brilliancy of its appearance. It exhibits much more of majesty than the rest, and discloses a trait in nature which has often puzzled shallow philosophers. In the quadrangular and blue passion-flowers you saw an *involucrum* consisting of three large concave orbicular leaves protecting the flower in the early stage; here we possess only three small serrated spear-shaped leaves, which affords abundant proof that *use* is not always the plan of nature, but that she indulges sometimes in *ornament*. Thus we have nipples which answer no other end but as a correspondence with our better halves. So also the *stipules* on the stalk are equally small, and, consequently, cannot serve the purpose of protection; but in such instances, we may remark, that nature is œconomic. As another essential difference, we cannot fail to notice the double *radiance*, serving as a most elegant Indian parasol to ward off the piercing rays of an ardent sun from the organs destined to reproduce the species. Here the *Filaments*, *Anthers*, and *Pistillum* are compressed into a smaller space; and the *Nectarium* is first defended by small *teeth* placed in several rows, and as if this was not a sufficient guard, nature has also formed a complete barrier, by a thick *membraneous expansion* closely locking up this reservoir of nectar. The *Alata Passion-flower* was first introduced into the English garden by Mr. Malcolm, in 1773. It, of course, arranges under the same class and order as the other Passion-flowers, and exhibits to a fervent imagination the same fancy of a crucifix; and here we might add, that the column in the centre is spotted as if stained with blood.

Beneath the covert of o'erarching trees
Bright Murucuia woos the cooling breeze.
The passing Indian turns th' admiring eye,
Smit by the glories of her crimson dye,
And stops, in pleas'd attention, to survey
Her vivid leaves and variegated ray.—
But loftier thoughts the rising mind inspire
When warm devotion lends her holy fire.
Haply amid the convent's virgin train,
Bosom'd in shades beyond the western main,
At rosy morn, or evening's silent hour,
Some fair Enthusiast views the *sainted flower:*
When lo! to rapt imagination's eye
Springs the sad scene of darken'd Calvary!
The thorny crown the heavenly brows around,
The scourging thongs, the galling cords that bound,
And nails that pierc'd with agonizing wound.
Sudden she lifts to heaven her ardent eye
In silent gaze and solemn ecstacy;
Then, fill'd with timid hope and holy fear,
Drops on the flower a consecrated tear.

Shaw.

Henderson pinx.t *Hopwood sc.ulp.*

The Quadrangular Lapsion-flower.

London. Published by [illegible] June 1.st [illegible]

PASSIFLORA QUADRANGULARIS;

OR,

QUADRANGULAR PASSION FLOWER.

THIS climbing plant, introduced from Jamaica into our gardens in 1768, by Philip Miller, is supposed to be a variety of the Alata, or winged Passion-flower. Like it, the stem is quadrangular, and winged, as the shaft of an arrow; and if it be allowed to use the same fancy as Linnæus sometimes indulged, we should conjecture it to be an HYBRID, betwixt the common blue Passion-flower, and the Alata, or winged. The involucre most resembles the *blue* Passion-flower; the proper calyx, and petals of the corolla, the *alata*; the radiance lies flat on the corolla, as with the *common*; but in size, and configuration, resembles most the *alata*; whilst the inner part of the nectary, and stamina, bear an higher affinity to the *alata*. The leaf also most resembles the *alata*, with the tendril. As with the other Passion Flowers, it brings to mind the Mysteries of our religion.

At length the fated term of many years
The world's desire have brought, and lo! a GOD appears....
The Heav'nly babe the Virgin mother bears,
And her fond looks confess the parent's cares;
The pleasing burden on her breast she lays,
Hangs o'er his charms, and with a tear surveys;
The infant smiles, to her fond bosom prest,
And wantons, sportive, on the mother's breast;
A radiant glory speaks him all divine,
And in the Child the beams of GODHEAD shine.—
Now time, alas! far other views disclose...
The blackest comprehensive scene of woes.
See where man's voluntary sacrifice;
He bows HIS head, and GOD, the Saviour, dies!...
Fixt to the cross, his healing arms are bound,
While copious mercy streams from every wound:
Mark the blood-drops that life exhausted roll,
And the strong Pang, that rends the yielding soul!
As all death's tortures, with severe delay,
Exult and riot in the noblest prey:...
Lo! the bright Sun, his chariot backward driv'n,
Blots out the day, and perishes from Heav'n:
Earth, trembling from her entrails, bears a part,
And the rent Rock upbraids man's stubborn heart.
The yawning Grave reveals his gloomy reign,
And the cold clay-clad Dead start into life again!

LOWTH.

Henderson pinx.t

Stadler sculp.t

The White Lily.

London Published Aug.t [illegible] Thornton

WHITE LILY,

OR,

LILIUM ALBUM.

THE *White Lily* with variegated leaves is native of Persia, where it majestically presents its finely-polished bosom to the all-enlivening sun, the object of worship in eastern nations. How contrasted is this flower with our humble Lily of the Valley, which even hides its delicate pendulous head from the feeble rays of the spring! The *White Lily* has, however, like all other lilies, a *corolla* (or nuptial bed), consisting of six *petals*, three inward and three outward. The interior petals are artfully *double-grooved* on the back, to receive the edges of the three exterior petals, for the greater security, before expansion, of the organs for reproducing the species, which are the six *stamina* (or males), each composed of a *filament*, elevating an *anther*, *bicapsular*, or consisting of two cells, or bags, containing the yellow *farina*, for rendering prolific the seeds contained within the *pistillum* (or female), the next part to be described, which has a three-cornered *stigma*, sitting upon a very conspicuous *style*, whose base is a triangular *germen*, containing the *embryo-seeds*....The *White Lily* comes under the Class HEXANDRIA, and Order MONOGYNIA, of Linnæus, and in the reformed System, Class SIX MALES, Order ONE FEMALE. It has been selected by us as illustrating, in the clearest manner, the parts of fructification, more especially when we add to it, a knowledge of the blue Passion-flower, and the Night-blowing Cereus. Our blessed Saviour thus alludes to it, when addressing his faint-hearted disciples.

Behold the rising lily's *snowy* grace;
Observe the various vegetable race;
They neither toil nor spin, but careless grow,
Yet see how warm they blush! how bright they glow!
What royal vestments can with them compare!
What king so splendid, or what queen so fair!...

If, ceaseless, thus the birds of heav'n he feeds,
If o'er the fields *such lucid robes* he spreads,
Will he not care for you, ye faithless, say?
Is he unmindful? or ye less than they?

THOMSON.

If it be allowed to mix with sacred profane poetry, we would willingly add the admired verses of an old English bard, taken from "his Book of Plants."

Such as the lovely *Swan* appears
  When rising from the Trent or Thame,
And as aloft his plumes he rears
  Darkens the less beauteous stream:

So when this joyful *flow'r* is born,
  And does its native glories show;
Her clouded *rivals* she does scorn;
  They're all but *foils* where *lilies* grow.

Soon as the infant comes to light
  With harmless *milk* alone 'tis fed;
That from the innocence of *white*
  A gentle temper may be bred.

The *milky* teat is first apply'd
  To fiercest creatures of the earth,
But *she* can boast a greater pride,
  *A Goddess' milk produc'd her birth**.

When JUNO in the days of yore
  Did with the great ALCIDES teem,
Of *milk* the Goddess had such store,
  The nectar from her breast did stream,

Whitening beyond the pow'r of art
  The *pavement* where it lay,
Yet through the crevices some part
  Made shift to find its way.

The EARTH forthwith did pregnant prove
  With *lily flow'rs* supply'd,
That scarce the *milky way* above
  With *her* in *whiteness* vy'd.

Thus did the race of Man arise,
  When *sparks* of heav'nly *fire*
Breaking through *crannies* of the *skies*,
  Did *Earth's* dull mass *inspire*.

Happy those *souls* that can with *me*
  Their native *white* retain;
Preserve their heav'nly *purity*,
  And wear no guilty *stain*.

Peace in such habit comes array'd,
  This dress her *Daughters* wear;
Hope and *Joy* in *white* are clad,
  In *sable* weeds *Despair*.

Thus *Beauty*, *Truth*, and *Chastity*
  Attired we always find,
With *inward Love* these *robes* agree,
  With *Virtue* are conjoin'd.

NATURE on many Flow'rs beside
  Bestows a dusky *white;*
On *this* SHE plac'd HER greatest pride
  And spread it o'er with *Light*. COWLEY.

* The overflowing Milk of JUNO (like that of the Virgin on the Holy Thistle) is said to have produced both the *Galaxy*, or *Milky Way*, and the *White Lily*.

Trimyle pinx.t *W. Ward sculp.t*

The Superb Lily.

London. Published June 1.st 1799 by J.s Sowerby

THE SUPERB LILY;

OR,

LILIUM SUPERBUM.

THE *Superb Lily* is a native of North America, and was first introduced into England in 1738, by Peter Collinson, Esq. It was then called the great yellow-flowering Martagon, and distinguished from the purple, or common Turkscap, by having its leaves *scattered,* instead of being placed in a whorl. Its flowers rise in the form of a stately pyramid by very long pedunculi, or footstalks, each issuing from an axilla of the stem-leaf. In common with the liliaceous tribe, it has *no calyx*, a fleshy *corolla,* consisting of six petals, which, like the other Martagons, at first beautifully involve the organs for reproduction, and then become reflected, and curl more and more back, as the six *stamina* and *pistillum* advance towards perfection. At this period the *anthers,* like a double folding door, roll back their partitions, to disperse the fecundating *pollen* for the impregnation of the pistillum. We then behold these parts decay in progression, the grand purpose of Nature being fulfilled, and the *peduncles,* or flower-stalks, which were before elegantly *pendent,* become *rigidly erect.* As the pericarp, or seed-vessel, ripens, its three valves gradually separate, finely exhibiting that *interlacement of fibres,* which sowed these parts together before maturity. In our picturesque plate the reader will find the *northern sky* and *shade* which this plant requires, a circumstance happily caught at by the poet in making his allegorical allusion to our flower.

Fann'd by the summer gale, a *Poplar* stood
Beside the margin of the silver flood;
Beneath its playful gently-wav'ring shade
A *Lily* proud her dazzling bloom display'd!
The flow'r complain'd, that stretching o'er her head
The dark'ning tree her broadest umbrage spread.
Not unattentive to the mournful strain,
The master heard his fav'rite flower complain:
The steady axe soon urg'd the fatal wound,
And bow'd the stately Poplar to the ground!
The Lily boastful *now* in full display
Gave all her beauty to the garish day.
But soon, her triumph ceas'd...the mid-day beam
Pour'd on her tender frame a scorching stream.
The plant then sick'ning, drooping, languid, pale,
Call'd the soft show'r, and call'd the cooling gale;
But no soft show'r, nor gale with cooling breath,
Approach'd to save her from untimely death.

JERNINGHAM.

ARUM DRACUNCULUS,

OR,

DRAGON ARUM.

THIS extremely fœtid poisonous * plant will not admit of sober description. Let us therefore personify it.

SHE † comes peeping from her purple crest with mischief fraught: from her green covert projects a horrid spear of darkest jet, which she brandishes aloft: issuing from her nostrils flies a noisome vapour infecting the ambient air: her hundred arms are interspersed with white, as in the garments of the inquisition; and on her swollen trunk are observed the speckles of a mighty dragon: her sex is strangely intermingled with the opposite!‡ confusion dire!—all framed for horror; or kind to warn the traveller that her *fruits* are *poison-berries, grateful* to the *sight* but *fatal* to the *taste,* such is the plan of PROVIDENCE, and such HER wise resolves.

" Thy soul's first hope! thy mother's sweetest joy!"
Cried tender LAURA, as she kiss'd her boy,
" Oh wander not where DRAGON ARUM show'rs
" Her baleful dews, and twines her purple flow'rs,
" Lest round thy neck she throw her snaring arms,
" Sap thy life's blood, and riot on thy charms.
" Her shining *berry,* as the ruby bright,
" Might please thy taste, and tempt thy eager sight:
" Trust not this specious veil; beneath its guise,
" In honey'd streams a *fatal poison* lies."

So *Vice* allures with *Virtue's* pleasing song,
And charms her victims with a *Siren's* tongue.

FRANCES ARABELLA ROWDEN.

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* From the root, however, of this plant, a powerful and useful sternutatory may be made.

† In this description the author has had in view the fancy of the ancients respecting that being whom they represented as hostile to man.

Ἥξει δε καὶ πολύπους
Καί πολύχειρ, αἱ δεινοῖς
Κρυπτομένα λόχοις
Καλκοπους Ἐριννύς.

Lo! with unnumber'd hands, and countless feet,
The FURY comes, her destin'd prey to meet;
Deep in the *covert* hid.—

SOPHOCLES.

‡ Linnæus places this plant in the class GYNANDRIA, other authors refer it to MONŒCIA, and in our reformed system it comes under the class MANY MALES, order, FLOWERS SPATHED.

Henderson pinxt. *Stadler sculpt.*

The Maggot-bearing Stapelia

Published [illegible]

MAGGOT-BEARING STAPELIA.

STAPELIA HIRSUTA.

DISPERSED over the arid * wilds of Africa, in pyramidal forms, issue the fleshy stems, destitute of leaves, of the Hirsute STAPELIA. These stems are on every side armed with hooks like claws. The juices of this plant are so acrid, that the smart these occasion on the tongue will be sensible a long while, and even fatal, if tasted beyond a certain proportion. Nature has well marked it of the natural order, *the Lurid*, or poisonous, for the *corolla*, which is deeply cleft into five segments, is of a dusky purple, and dingy yellow, and speckled like the belly of a serpent, besides being fringed with hairs, which gives to this flower something of an animal appearance. It has likewise so strong a scent, resembling carrion, that blow-flies in abundance hover round it; and mistaking the *corolla* for flesh, deposit there their eggs, which are soon converted into real maggots, adding to the horror of the scene, some being seen writhing among the purple hairs of the flower, and others already dead for want of food, the vegetable in this rare instance deceiving and overcoming the animal creation. The star-like appearance in the centre is the *Nectary*, mingled with the five *Stamina*, and two *Pistilla*. Hence it arranges under the class PENTANDRIA, order DIGYNIA, of Linnæus. We have been favoured with the following fine poetic effusion from the masterly pen of Dr. SHAW on this plant.

'Mid the wild heights of Afric's stormy cape,
The fell STAPELIA rears her Gorgon shape;
Spreads her rough arms, and turns, with scowling eye,
Her bearded visage to the thund'ring sky.
To magic rites she bends her wayward care,
And with unholy vapours taints the air,
Distils with fatal art each secret bane,
And gathers all the poisons of the plain.
By native instinct round her drear abode
Glides the green snake, or crawls the shapeless toad.
Lur'd to the *hag*, by horrid spells subdued,
The care-craz'd *mother* brings her num'rous brood,
Hears the smooth tale, and trusts, in evil hour,
The tender offspring to her guardian pow'r.
The subtle fiend assumes a softer air,
And falsely smiles, and feigns a mother's care:
But gone the parent, 'mid the cavern's gloom
The dire *Enchantress* drags them to their doom;
In pining atrophy to yield their breath,
And slowly languish in the arms of death;
Till, dried each wasted limb, each haggard eye,
Their shrivell'd forms her hideous rites supply.
No soft remorse her fell resolves can stay,
Born of the rocks, as pitiless as they!
So foul *Canidia*,† with *malignant joy*,
Watch'd the slow progress of the buried boy;
So dire *Erichtho*,‡ fraught with spells accurst,
Feign'd *pious cares*, and *murder'd while she nurst!*
So fierce *Medea*,§ with *relentless eye*,
And *soul unmov'd*, beheld her children die;
And ruthless plung'd, by demon rage possess'd,
The fatal dagger in each infant breast;

SHAW.

* The STAPELIAS in our hot-houses never require to be watered. † Hor. Epod. 5. ‡ Lucan. lib. 6. § Ovid. Epist. xiii.

Reinagle Sen.t A.R.A. Pinx.t

I. Tetid Pothos.

II. Pitcher Plant.

III. Venuss Fly Trap.

Sutherland Sculp.t

American Bog Plants.

London, Published by D.r Thornton, July 1.1806.

POTHOS FOETIDA;

OR

FETID POTHOS.

THE generality of these plants, inhabitants of South America, are *parasitical,* and growing at the roots of trees, shoot their stems upwards to a considerable height, which at every joint produce fresh roots, extending like the Tænia,* and being voluble, attach themselves firmly to their stems and branches, and by exhausting these of their sap, finally deprive them of life. Our specimen, the FETID POTHOS, is an inhabitant of *North America,* and was introduced into this country by PETER COLLINSON, in the year 1763, and it shews first its *spatha,* which is of a yellow colour dashed with purple stripes, (the indications of poison), like an arum, inclosing a short *spadix,* on which are placed chequer-wise the sessile *flowers,* each of which possesses four *stamina* and one *pistillum*; hence it arranges under the Class GYNANDRIA, Order TETANDRIA, and *vice versa,* as respects our *Reformed Sexual System.* The leaves, which we need not mention here, appear after the flowers. As the growth of its congeners is by *rooting joints,* so this *poisonous* herb is amazingly extended by *suckers,* and thus the FETID POTHOS spreads over a vast extent of bog, filling its whole atmosphere with *poisonous exhalations,*

PLACED where no nutmeg scents the vernal gales,
Nor towering plaintain shades the mid-day vales;
No grassy mantle hides the sable hills,
No flow'ry chaplet crowns the trickling rills;
Nor tufted moss, nor leathery lichen creeps
In russet tapestry o'er the crumbling steeps.
No step retreating, on the sand impress'd,
Invites the visit of a second guest;
No refluent fin th' unpeopled stream divides,
No revolant pinion cleaves the airy tides;
Fierce in dread silence on the blasted heath
Fell POTHOS sits, the *hydra-plant* of death.
Lo! from one root, th' envenom'd soil below,
A thousand vegetative *serpents* † grow;
With horrid look the *Hooded Monster* spreads
O'er ten square leagues his far-diverging heads;
Or in one trunk *entwists* his tangled form,
Looks o'er the clouds, and hisses to the storm.
Steep'd in fell poison, as his sharp teeth part,
A thousand tongues in quick vibration dart;
Snatch the proud *Eagle* towering o'er the heath,
Or pounce the *Lion* as he stalks beneath;—
Here at his root two *scion-demons* dwell,
Breathe the faint hiss, or try the shriller yell;
Rise, flutt'ring in the air on callow wings,
And aim at *insect-prey* their *lesser stings.*

DARWIN.

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* So the lone *Tænia,* as he grows, prolongs
His flatten'd form with young adherent *throngs.*—DARWIN.

The *Tape-worm* dwells in the intestines of men and animals, and grows old at one extremity only, producing an infinite series of young ones at the other; the separate joints have been called *Gourd-worms,* each of which possesses a mouth of its own, with organs of digestion. These produce a dreadful emaciation of the body, from the quantity of chyle they rob the constitution of, and finally *death.*

† This genus was anciently called *Dracontium,* from *Draco,* a dragon; and our specimen was named *Dracontium Fœtidum.* Vide Miller's Dictionary, the charming edition of it, by Martyn.

SARRACENIA FLAVA;

OR,

YELLOW PITCHER-PLANT.

This plant, so singular for its leaves and flowers, is native of Virginia, and grows in bogs, or shallow water. It was introduced into our gardens in the year 1752. The leaves in their infant state are flat, tapering, and of one compact substance; but at a certain age, at the top the appearance of a *lid* is seen, bent down, or rather then resembling the upper bill of a bird; afterwards the *leaf opens from within* until it enlarges itself into a triangular *hollow vase*, when the lid turns back, taking the form of a friar's cowl. This contains water, and in droughts it is said that the lid falls down over the mouth of the tube, serving as a covering to it, to prevent the exhalation. It is called the *Pitcher-Plant*, because small birds repair to it, and drink out of the hollow leaf. It is also named the *Side-Saddle* flower, from its flower being supposed to resemble a woman's pillion. The *leaves*, as well as *flowers*, are radical. Each *flower* is elevated on a long *scape*. It is defended by a *double calyx*. The *outer* consists of three small *leaves*: the *inner* of five orbicular green *leaves*. The *petals* of the *corolla* are five, more oblong, of a pale yellow. The *stamina* are numerous, and lie concealed under the target-formed *stigma* of the pistillum, which perishing, with the stamina, leaves the swollen *germen* on the elevated scape. The concealment of courtship here has furnished the poet with the following beautiful lines.

In vain a num'rous race of gentle swains
To *Sarracenia* pour'd their tender strains:
In vain their ardent pray'r, their artless lay;
Of tyrant vice she fell the hapless prey.—
A libertine bred in the school of lies
With lawless passion to the beauty flies;
Gain'd her weak heart, and soon he turn'd from thence,
Scarce having yet indulged his eager sense;
Then the fell Furies, sailing through the air,
Aim their keen weapons at the tortur'd fair;
Scorn in her bleeding bosom strikes his dart,
And sad Repentance writhes around her heart.
Remorse her stinging snakes in fury throws,
And Madness heightens her exalted woes.—
Poor injur'd suff'rer! bid adieu to peace;
Not in this world of sin thy pangs will cease:
Not till kind *Mercy* takes thee to her breast,
And bears thy spirit to the realms of rest.

Frances Arabella Rowden.

DIONÆA MUSCIPULA;

OR,

VENUS'S FLY-TRAP.

THE SACRACENIA is said, by Bartram, in his Travels into North America, to contain a quantity of pure limpid water; and to open its *lid* when this reservoir is nearly empty, and close it when full. He mentions, also, his having tasted this water, and it was clear, limpid, and refreshing as the morning dew. Examining into the interior of these pitcher-like leaves, he found them beset with short stiff *hairs,* which all pointed downwards, and (very like our mouse-traps) allow a passage for entrance, but all return is denied, and hence the *Sacracenia* has the property of destroying *insects.* But in this it is far surpassed by another *bog-plant,* introduced among us in 1765, called, for this very circumstance, MUSCIPULA, *the fly-catcher*; and DIONÆA, a name for Venus, on account of its *beautiful white flowers,* which rise in a general *umbel,* from a long *scape,* each flower being terminal, consisting of five milk-white *petals,* ten *stamina,* and one *pistillum,* somewhat resembling the Geranium. Its radical *leaves,* which are in circular order, are of a most extraordinary construction, having the *peduncles* winged,* and exactly similar in shape and contrivance to our *rat-trap,* with spikes in the center, and teeth around, also baited from glands which distil honey. No sooner does a deluded insect touch this honey, than the trap instantly closes, and with such swiftness, as never to miss its prey, and with such a spring as to defy all exertions for escape, and only opens when the insect is dead, when it expands again for fresh murders!

Haste, glittering Insect, tenant of the air,
Oh steer from hence, your rapid course afar!
With tend'rest words, sweet becks, and nods, and smiles,
Should DIONÆA lure you to her toils,
Caught by her *art* in vain you try your pow'r,
A certain death awaits you at that hour;
On you will *Rivals* point the *furious dart,*
And plunge th' *envenom'd weapon* in *your heart!*

---

* We are inclined to this opinion, from observing the structure of the leaves of the DROSERA ROTUNDIFOLIA (*Round-leaved Sundew*), a native of our climate, which has also irritable round leaves, but on long plain peduncles or footstalks, whose traps are also toothed, and on each tooth day and night hangs a clammy globule, which looks like dew, hence its English appellation. It has *Five* STAMINA and *Five* PISTILLA. The Poet thus celebrates it.

Queen of the Marsh, imperial *Drosera* treads
Rush-fringed banks, and moss embroider'd beds;
Redundant folds of glossy silk surround
Her slender waist, and trail upon the ground;
Five sister-nymphs collect with graceful ease,
Or spread the floating purple to the breeze;
And *five* fair youths with duteous love comply
With each soft mandate of her moving eye.
As with sweet grace her snowy neck she bows,
A zone of diamonds trembles round her brows;
Bright shines the silver halo, as she turns;
And, as she steps, the living lustre burns.

DARWIN.

THE FLY.*

Ah! *fleeting race!* soon thy hour's fled,
Soon the earth is cover'd with thy dead,
  Thy myriad people soon are gone;
And frolic mirth 's no longer seen,
Ah! soon ye fill th' insatiate tomb,
  It scarce remains *that ye have been!*

Thus struck with wonder I behold
Man's *thoughtless race,* in error bold,
  Forget, nay scorn, the laws of *Death*;
With these no projects coincide,
Nor vows, nor toils, nor hopes, can guide,
  Each thinks he draws *immortal* breath!

Each, blind to *Fate's* approaching hour,
Intrigues or fights for wealth or pow'r,
  And *slumb'ring* dangers dare provoke:
And *he* who, tott'ring, scarce sustains
A century's age, plans future gains,
  And feels an *unexpected stroke!*

Go on, unbridled, desp'rate band,
Scorn rocks, gulphs, winds, search sea and land,
  And spoil new worlds, wherever found:
Seize, haste to seize the glitt'ring prize,
And sighs, and tears, and pray'rs despise,
  Nor spare the temple's holy ground!

They go, succeed; but look again,
The desp'rate band you seek in vain,
  Now trod in dust, the peasant's scorn:
But who that saw their treasures swell,
That heard th' insatiate crew rebel,
  Would e'er have thought them mortal born?

See the world's *Victor* mount his car;
Blood marks his progress wide and far,
  Sure *he* shall reign while ages fly:
No; vanish'd like a morning cloud,
The Hero was but just allow'd
  To fight, to conquer, and to *die.*

And is it true, I ask with dread,
That Nations, heap'd on Nations, bled
  Beneath *his* chariot's fervid wheel,
With trophies to adorn the spot,
Where *his* pale corse is left to rot,
  And doom'd the hungry reptile's meal?

Yes! Fortune, weary'd with her play,
Her toy, *this hero,* casts away;
  No haughty thoughts now fill his breast!—
How changed his look!—how pale!—how cold!—
Next made a spectre to behold
  In realms—where he shall *never rest!*

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* Many other plants beside the Catchfly Dionæa are inimical to this fugacious race, as the Sarracenia, Silene, Androsymum, &c.

Audubon del.

Caldwall sculp.

The Purple Rhododendron.

Drawn, Published by J. J. Audubon, Edinburgh.

RHODODENDRON PONTICUM,

OR,

PONTIC RHODODENDRON.

In the dreary season of winter, nature has partially indulged the eye with *ever-greens*, the presage of the resurrection of animated beings, and of the returning zephyr; and none of this class claims our attention, for the beauty of its flowers, and wisdom of its contrivance, more than the Pontic Rhododendron, which was introduced into our gardens from the Levant in 1763. The flower is *funnel-shaped* beneath, and then expands into the resemblance of five *Petals*, which, in fact, are only five *Laciniæ*, or *Segments*, of a *monopetalous Corolla*. The upper *Segment* performs the office of *Nectary*, is grooved in the middle, and so fertile is this part in the formation of honey, that you may observe a sweet globule in almost every expanded flower. From the cup of the corolla issue ten *Stamina*, the *Filaments* of each are beset with *fine hairs*, and are *curvilinear*, in order better to perform the useful office of dispersing the *Farina* on the *Pistillum*, which is contained in two *Cells*, each of which open at tops. The *Pistillum* takes the same elegant curve as the Stamina: but when impregnation has been accomplished, what appeared before a cluster of flowers, the stamina and corollas having withered, now is seen entirely to consist of pistilla, each one displaying its pentagonal *germen*, the *style*, and *stigma*, and assuming its distinguished rank; and Nature now delights us with the art shewn in adjusting their respective places around the stem. Nor was the kind intention of Provident Nature less conspicuous in the infant state of the flower, when each bud was protected by a corresponding *Stipule*, which, as it ceased its utility, fell from off the stem, gradually unfolding to the admiring eye of the spectator, a superb group of purple crowning flowers, which, as being hardy natives of wild situations, cast an air of dignity over such solitary scenes.

O'er pine-clad hills, and dusky plains,
In silent state Rhodonia reigns,
And spreads, in beauty's softest bloom,
Her purple glories through the gloom.

There, by the solemn scene enchanted,
The melancholy maiden strays;
And by dark streams and fountains haunted,
Well pleas'd each rocky wild surveys:
To her more fair those shadowy bowers
Than glittering halls and castled tow'rs.

Nor, happy less, who thus unknown,
Can call the woods and shades his own!
And, wand'ring o'er the moss-clad plain,
At will indulge the pensive strain!
Array'd in smiles, array'd in terrors,
Great Nature's awful form admire,
And from the world, and all its errors,
In silent dignity retire!

Shaw.

THE BEE.

Beneath the meadow's flowery breast
The Wild-Bee* builds her *humble nest,*
And, anxious, to her mossy dome
Conveys her gather'd treasures home.
Each opening gem that scents the *field*
She bids its choicest fragrance yield;
Bright *Pimpernel,* of lively hue,
Fair *Speedwell,* rich in varied blue;
And *Orchis,* clad in speckled bloom,
And the sweet *Trefoil's* soft perfume;
And *Euphrasy,* of modest mein,
And *Meadow-sweet,* the vernal queen.
Sometimes amid the *garden's* maze
Secure the little Plunderer strays;
Robs the gay *Rose's* blushing dell;
Hangs in the *Lily's* silver bell;
Or from *Rhodonia's* purple flower
Culls sweets to fill her waxen bower.—
So lives the happy rural Maid,
By no ambitious wishes sway'd;
Fair tenant of the peaceful grove,
Content with industry and love!

Shaw.

---

* Bees, besides extracting from flowers honey and wax, in a way that no chemist, however great their art, could accomplish, in return, perform the office of bridegroom to flowers, by the conveyance of the fertilizing meal from one flower to another.

The *Humble Bee,* which we have introduced into our picture, differs, we believe, in manners from the common, or domestic bee, only by forming its nest under ground. Its cells are in the shape of acorns, attached to each other by a waxen thread, so as to resemble in the total a bunch of grapes; but here the presiding *Queen* is without wings, and smooth, and being all over of a shining black, may be compared to the Queen of Ethiopia. Each morning she sends out one of her subjects, who instantly obeys; and making a buzzing noise at the gate of the hive for near half an hour, by the motion of the wings alone, rouses from their slumbers the rest, who obey this summons, and then proceed to their several useful labours for the *commonwealth.* The Queen daily visits each cell, and always proceeds with several in her suit, and the rest make room for her to pass, when she directs the whole plan of operations. This insect is too nearly allied to flowers not to have found admission amongst them, and being once introduced, there needs no apology with the sentimental reader for delaying his attention a little, by a slight and elegant poetic effusion, even on *an insect!*

Henderson del.

Warner sculp

The American Cowslip

London Published May 1 1801 by J. Thornton

AMERICAN COWSLIP,

OR,

MEADIA.

It has its present appellation from its native country, and from the resemblance its growth bears to the ordinary Cowslip, possessing, like it, *leaves radical,* and an *erect scape* or *flower-stem**. From the summit of the scape, which is fringed round with numerous small and regular *leaves,* the *peduncles* or *flower-stalks,* as in umbelliferous plants, issue in every direction, each bearing a very beautiful *flower.* These consist of a *Calyx* composed of one leaf, divided into five regular green *segments,* which at first embrace the young flower, and afterwards expand; a *Corolla* consisting of five delicate *lilac segments,* which, like those of the Calyx, first enclose the more essential parts, *the organs for reproduction,* which having acquired a due perfection, then beautifully *reflect themselves,* in order that these may have a due quantity of light and heat. The organs for reproduction are the *five Stamina,* which issue through the *mouth* or *tube* of the Corolla; each *filament* being firmly pressed by as many *nectaria,* leaving however free the barb-like *Anthers,* which curiously clasp each other, the two opposite hollows on the sides firmly fitting together, for the protection of the fecundating *farina,* which, when these separate, is thrown forth with a spring upon the *Pistillum,* proceeding from the centre of the flower. When *these* are *longer* than the *Stamina,* Nature usually adopts the device of forming, as we see here, *pendulous flowers.* We have yet further to remark the unceasing care of Providence, whilst Nature appeared to be only industrious to make the habitation of man gay and delightful, she was carrying on her principal design, being intent upon the continuance, and preservation, of the species. The story of the American Cowslip fully explains this. For the *seeds* becoming impregnated, those *segments,* which looked the other day so charming, separate in disorder, shrink, and wither; the *Stamina* seceding from each other, with their empty *Anthers,* perish; even the *Stigma* and *Style* become dry; crowning the fruitful *Germen,* which increases day by day; now we may observe the reflected *segments* of the Calyx to assume their *first form,* closing round each prolific *Germen*; and the *Peduncles,* which were before bent downwards, moving with every Zephyr, gradually become *rigid* and *erect,* giving to the plant in this stage as much of form and stiffness, as it had before of lightness and elegance‡. In its perfect state it might easily raise to our fancy the image of a *vegetable sky-rocket* in different periods of explosion, or some might conceive it to resemble a number of light *shuttlecocks,* fluttering in the air. This plant Mr. Catesby in his natural history of Carolina called Meadia, after the famous Dr. Mead, which appellation Linnæus has rejected, styling it in his works, Dodecathon (*the twelve Heathen Gods*), on account of the singular beauty, and number of its flowers. It comes under his Class V. Pentandria, five males, Order I. Monogynia, one female, and in our reformed system, Class Five Stamina, Order, One Pistillum. It is thus elegantly personified by Dr. Darwin.

Meadia's soft chains *five* suppliant beaux confess,
And *hand in hand* the laughing belle address;
Alike to all, she bows with wanton air,
Rolls her dark eye, and waves her golden hair.

Darwin.

* What a difference in *this scape* compared with *that* of the *American Aloe!*

‡ The instinct-like actions of the *Meadia* have a great resemblance to those of the *Superb Lily* before described.

Reinagle A.R. pinx.t

Caldwall sculp.t

The Narrow-leaved Kalmia.

London Published June 1. 1804, by D.r Thornton.

KALMIA ANGUSTIFOLIA;

OR,

NARROW-LEAVED KALMIA.

THIS beautiful shrub was introduced into our gardens from North America by Peter Collinson, Esq. in 1736. It grows to two feet in height, and sends out several upright branches, which are beset with flowers like a cluster of bees. Each flower is rotate, and possesses a pistillum in the centre, surrounded by ten males, or stamina. The filaments are like the radii of a wheel, and the anthers are each inclosed in niches of the corolla. As these filaments increase they form a bow, and when the elasticity is superior to the resistance of the niches enclosing the anthers, each in turn springs forth, ejaculating the pollen over the pistillum in the centre. The contrivance of nature, in this instance, to continue on the species is worthy our thought and admiration. It comes under Class DECANDRIA, ten male, Order MONOGYNIA, one female, of LINNÆUS. We have been so fortunate as to be favoured by the following beautiful lines on this plant, which afforded to the poet an opportunity of a very grand comparison.

High rise the cloud-capp'd hills where KALMIA *glows*
With *dazzling beauty*, 'mid a *waste of snows*,
O'er the *wild* scene SHE casts a smiling eye,
The earth her bed, the skies her canopy.—
Thus from the north, in undulating streams,
Glance after glance, the polar radiance gleams,
Or, in expanding glare, at noon of night,
Fills the red zenith with unbounded light.
Quick fly the timid herds in wild amaze,
While arms unseen clash dreadful 'mid the blaze.
Th' affrighted shepherd to his cot retires,
Nor dares to gaze upon the quiv'ring fires:
The crouching dogs their master's feet surround,
And, fix'd by fear, lie torpid on the ground:
Loud shrieks the screaming owl, and flits away,
Scar'd by the lustre of unlook'd-for day:
E'en the grim wolf his nightly prey forsakes,
And silent in his gloomy cavern quakes,
Till skies serene their starry groupes display,
And each terrific phantom dies away.

SHAW.

Henderson pinx.

Landseer sculp.

The China Limodoron.

London Published by G.G. Thornton Feb.y 1st 1801

LIMODORON TANKERVILLIÆ;

OR,

CHINESE LIMODORON.

THIS beautiful plant was introduced into our gardens in 1778 by Dr. Fothergill, who obtained the seeds from China. Its Latin specific name was given it in honour of the Countess of Tankerville, a cultivator of flowers, the elegant and refined pleasure of virtuous and noble minds. Its leaves are ensate, plaited, and often somewhat revolute. The flowers are elegantly disposed upon the scape, three together at the base, then opposite, and clustered above. In their infant state these are protected by a green spatha, which drops as the flowers advance; these then beautifully unfold their five brooding petals, which are white above, but of a brown red beneath, elegantly contrasting with a bell-shape nectary, exteriorly white at its base, but marked with a dark purple at its mouth, and of a lighter tinge. The inside of the tube itself is of a dark purple, but a pale line runs along its centre towards the horn: this conceals the organs of generation, which are curiously fashioned, for as in the Orchis tribe, the anthers are twin, depending, and lodged within cells, closely connected with the stigma, which is supported by a fleshy style, but the germen is exterior. It comes under the class of GYNANDRIA, Order DIANDRIA, of LINNÆUS.

SWEET FLOWER, whose modest beauties blow
  Deep in the green and silent vale,
Where willows, bending o'er the stream,
  Wave gently to the passing gale!

So, in thy native Sina's shades,
  Like THEE, *sequester'd* and *serene,*
Soft smiling sit her pensive maids,
  Pleas'd with the solitary scene.

There, list'ning to some magic tale,
  Of fabled bliss, or fancied woe,
They deck with art the silken veil,
  Or tend the flowers that round them blow.

From moss-clad rocks and tangled shades
  The murmuring waters roll around;
Sweep through the gardens green arcades,
  And shine along the varied ground.

On waving boughs the plumy race
  Sweet carol from the blossom'd spray;
While, glittering in each pictur'd vase,
  The golden-scaled beauties play.

Domestic cares and duteous love
  In turn their tender thoughts employ;
And form within their green alcove
  A happiness that cannot cloy.

SHAW

R. Reeve pinx.t

Caldwall Sculp.t

Indian Reed.

Published by C.t Thornton &c.

INDIAN REED;

OR,

CANNA INDICA.

THIS beautiful plant is native of warm climates, and was early introduced into our gardens, even as far back as the time of Gerard, who mentions it as growing in his garden in 1596. From a tuberous, horizontal, knotty root, proceed several stalks, which in their early state, are protected by the young leaves, which are beautifully convoluted, and open at top, but as the stem rises, these take their position around it, alternate, spreading out to the extent of a foot in length, and half a foot in breadth, channelled, undulated, with parallel nerves running to the membranous edges; the leaves at their bases encompass the stem. The flowers at first are all covered by a common green Spatha, this afterwards embraces the lower part of the flower-stalk; the flowers are in spikes, often two together, first protected by a small oblong Involucre, and another, by its side, resembling a small leaf; the Perianth consists of three small, concave, spear-like, coloured leaves; the Corolla is sexpartite, the three outer laciniæ, or segments, are concave, spear-like, thrice the length of the leaves of the perianth; and the three inner laciniæ are twice the length of these, two of them ascending, one turned to the side, often bifid, forming a kind of upper lip, or helmet, protecting the Nectary, which is also deeply bipartite, the upper lacinia of which contains both the sessile Anther, and the spatulate Pistil; its extreme part is first ascending, then rather revolute, but the under lacinia is revolute in a contrary direction to the other, and forms, as it were, the under lip of this pseudo-ringent Flower. Impregnation being performed, the flower (as it is called) being gone by, the swollen Germen next appears beset with points, crowned with the three-leaved perianth above, and the two scaly leaves below, or involucres, and it afterwards becomes a rough Capsule, three-sided, three-celled, containing a triple row of seeds, the size of a large pea, black, shining, so hard as to be used as shot by the Indians, and by the Roman Catholics as beads, for making their Rosaries. It comes under Class I. of LINNÆUS. MONANDRIA, *one husband,* and Order I. MONOGYNIA, *one wife.* We have been so fortunate as to be favoured with the following most elegant and appropriate lines on this beautiful flower by a poet, who has often before very kindly obliged us.

Where sacred Ganges * proudly rolls
O'er Indian plains his winding way,
By rubied rocks and arching shades †,
Impervious to the glare of day,

Bright *Canna,* veil'd in Tyrian robe,
Views her lov'd lord with duteous eye;
Together both united bloom,
And both together fade and die.—

Thus, where Benares' ‡ lofty towers
Frown on her Ganges' subject wave,
Some faithful widow'd bride repairs,
Resolv'd the raging fire to brave.

True to her plighted virgin vow
She seeks the altar's radiant blaze,
Her ardent prayers to Brahma § pours,
And calm approaching death surveys.

With India's gorgeous gems adorn'd,
And all her flowers, which loveliest blow:
" Begin," she cries, " the solemn rites,
" And bid the fires around me glow.

" A cheerful victim at that shrine
" Where nuptial truth can conquer pain,
" Around my brows rich garlands twine,
" With roses strew the hallow'd plain.

" Near yon deep grove the pyre ascends,
" Where, pale in death, *Calindus* lies;
" Soon shall these arms, no more withheld,
" Embrace him in his kindred skies.

" Friends of my youth, your plaints forbear,
" Nor with a tear these rites profane;
" Ere long, the sun, that now declines,
" Shall see me 'midst the sainted train.

" Mother, my last embrace receive;
" Take, sisters, take this parting kiss:
" A glorious martyr decks your race,
" And leaves you for the realms of bliss.

" Hark! from the clouds his voice I hear;
" Celestial visions round me fly!
" I see the radiant shape appear,
" His image beckons from the sky.

" Haste, holy Bramins! light the blaze
" That bears me to my parted love:
" I fly, his seraph form to meet,
" And join him in the realms above‖."

SHAW.

" After the mournful sacrifice, the ashes of the faithful widow are collected and deposited in an urn, and placed in the family sepulchre; and it is both an affecting and interesting sight to see the Hindoos proceeding in groups, carrying flowers in their hands, which they spread over the tomb of the deceased, at the same time they chaunt solemn songs in honour of the dead."

AN

INDIAN

DIRGE.

Ah say, why tearful is the sadden'd eye?
Why weeps pale Sorrow o'er the mournful tomb?
Is it that Death's dark cloud with deep'ning gloom
Has swept Life's cheerful morn and smiling sky?
Yet, sorrowing Pair, whose fond parental breasts
Still mourn departed loveliness and worth;
Yet, yet look up to where your *Angel* rests,
And mounts secure from all the woes of earth!

And thou, lorn Sister, lovelier in thy tears,
O wipe the liquid sorrow from thy brow;
And thou, Companion of her once gay years,
Smile that a *Seraph* claims thy friendship now;

AIR.

For in robes of glory beaming
High she trips the azure ground,
Where, in sounds of rapture streaming
All the harps of Heav'n resound!

Falls, in strains of music dying,
Streams, that warble as they flow,
Symphonies in Zephyrs sighing,
Ever breathing soft and slow;

Fields, that know no winter dreary,
Groves, to heav'nly musing dear,
There her charm'd eye never weary,
Never tir'd her ravish'd ear!

RECITATIVE.

Lift, lift, fond Pair, the drooping head;
O let the Smiles, so soon that fled,
    Again salute th' enliven'd Morn!
Hush, hush Affection's mournful sigh,
And wipe from out the tear-dew'd eye
    The pearls that Woe's pale cheek adorn.

CHORUS.

Ye Choirs of Harmony on high,
Who tune the spheres that charm the sky,
For ever rolling round th' eternal throne;
Quick with your magic sounds unfold
Yon portals of celestial gold;—
A Sister Minstrel comes to claim her own.
Haste, bring the vest of shining white,
The glitt'ring harp, and crown of light,
And pour a flood of radiance on her way!—
She comes, she comes! upon her brow
Life beams immortal triumph now;
Her eyelids open on eternal day!

GRAND CHORUS.

Hark, how the golden lyres around
Roll all the majesty of sound,
As loud she hails her native sky!
Now wide upon the raptur'd sight
Burst beatific visions bright;
Death binds her lovely form no more;
She bursts the bonds that chain'd before,
And puts on—immortality.

HUNT.

NOTES TO THE CANNA INDICA.

* *Where sacred Ganges.*] The Ganges has been celebrated in all ages not only on account of the clearness of its water, which does not become putrid, though kept for years, as also for its sanctity. This water is conveyed to great distances, being esteemed necessary in the performance of certain religious ceremonies. All parts of the Ganges are said to be holy, but some particular parts are accounted to be more so than others, to which places thousands resort at certain seasons of the year, in order to purify themselves.——*Vide Maurice's Indian Antiquities*, Vol. I. p. 239.

† *Arching shades.*] Poetry and painting are called kindred arts; but the former oftentimes rises superior to the powers of the latter. Thus Virgil's description of *Fame:*

"Now Fame, tremendous fiend! without delay,
Through Lybian cities took her rapid way;
Fame, the swift plague, that every moment grows,
And gains new strength and vigour as she goes.
First small with fear, she swells to wond'rous size,
And stalks on earth, and tow'rs above the skies;
Whom, in her wrath, to heav'n, the teeming earth
Produc'd the last of her gigantic birth;
A monster huge, and dreadful to the eye,
With rapid feet to run, or wings to fly,
Beneath her plumes the various fury bears
A thousand piercing eyes and list'ning ears;
And with a thousand mouths and babbling tongues appears.
Thund'ring by night through heav'n and earth she flies,
No golden slumbers seal her watchful eyes;
On tow'rs or battlements *she* sits by day,
And shakes whole realms with terror and dismay."

Thus we could not introduce in our back-ground the Ficus Religiosa, or Indian Fig-tree, (called so from its producing a delicious fruit, of a bright scarlet colour, shaped like a fig,) overshadowing one of the noblest rivers in India. This tree rises at first much higher than our tallest oaks, and then sends out from the top lateral branches, and from thence *drop* other branches, which, reaching the ground, take root, and become trees, so that the canopy above continually extends, and furnishes new supports; thus constituting a *forest* of a *single tree*, under the shade of which 10,000 persons have been known, upon religious occasions, to repose. Milton's account of this tree is equally correct and sublime.

"So counsell'd he, and both together went
Into the thickest wood; there soon they chose
The fig-tree; not that tree for fruit renown'd,
But such as at this day to Indians known,
In Malabar and Decan spreads her arms,
Branching so broad and long, that in the ground
The bended twigs take root, and daughters grow
About the mother tree, a *pillar'd shade,*
High overarch'd, and echoing walks between;
There oft the Indian herdsman, shunning heat,
Shelters in cool, and tends his pasturing herds."

Par. Lost, Book ix.

‡ *Benares' lofty towers.*] Benares is one of the most ancient cities of Indostan; and besides various temples dedicated to almost innumerable deities (the fancies of the mind), it once boasted a pagoda (or sacred temple) of an immense size, in the centre of the city. This was situate close to the shore of the Ganges, into which stream, according to the account of Tavernier, a regular flight of steps descend, leading directly down from the gates of the pagoda. The body of this temple is constructed in the form of a vast cross, allusive to the four elements, with a very high cupola in the centre of the building, but somewhat pyramidal towards the summit; and at the extremity of every one of the four parts of the cross there is a tower, to which there is an ascent on the outside, with balconies at stated distances, affording delightful views of the city, the river, and adjacent country. That execrable spirit of bigotry, which actuated the mind of Aurengzeb, prompted that remorseless persecutor of the Hindoo faith to pollute this venerable fabric, and insult the religion of *Brahma* in its most ancient sanctuary. After having committed in the sanctuary the most wanton acts of atrocity, he levelled this venerable pagoda with the ground, and erected over its very site two lofty Mahommedan minarets, or mosques, the height of the former pagoda, which Mr. Forster, in his elegant but concise account of this city, says, "at the distance of eight miles, strongly attracts the eye of the traveller who approaches *Benares* on the river from the east quarter, and which, from their elevated height, seem to look down with triumph and exultation on the humbled pride and degraded devotion of this once flourishing city and university."——*Vide Maurice's Indian Antiquities*, Vol. III. p. 32.

HINDOO THEOLOGY.

§ *To Brahma pours.*] The subject is so extremely interesting, that of the great God himself, the author of our being, omniscient, omnipresent, and omnipotent, that the reader will forgive our entering widely here into the discussion of *primitive religion*, in order to prove that in *all Nations* the wise have worshipped *one only supreme God*, but the vulgar *the pictures of his attributes.*

The wisest among the Hindoos believe that there exists one supreme God, whom they denominate Brahme, the Highest. He is represented with four heads, as denoting omnipresence and omniscience; and he is the father of Brahma, Veesnu, and Seeva, a trinitarian god, most probably alluding to the actions of creating, upholding, and annihilating, or changing. This trinity of the godhead, armed with almighty power, is represented in sculpture with three heads. The countenances of Brahma and Veesnu are placid and smiling; and that of Seeva severe and vengeful. They occasionally, according to their creed, separate into their respective persons, and Veesnu has appeared, following their tradition, nine several times, on earth, for the sake of mankind.

In the Geeta, or holy book, there will be found this sublime address to Brahme. "Thou, O mighty Being, art greater than Brahma, Veesnu, and Seeva, the prime Creator, the eternal God, the God of gods. Thou art incorruptible, distinct from all other substances, for these,

at thy word, are transient. Thou art before all other gods, the ancient Poorush, the supreme supporter of the universe! Thou knowest all things, and art worthy above all to be known! thou art the head abode, and by thee, O infinite form! the whole universe was spread abroad."

The true God, says the learned author of Indian Antiquities, was revealed only by the priests to a very few, who could bear the light of truth, without being confounded by the blaze; for them alone they removed the mysterious veil and displayed the Deity in the radiant glory of his *unity*. From the vulgar eye this doctrine was kept inviolably secret, and the common Hindoos were taught a threefold Godhead, and *Brahma* was one of the persons of the Trinity, to whom prayers were by the direction of the Bramins (his priests) more particularly addressed.—*Vide Maurice's Indian Antiquities*, Vol. II. p. 71. *See also a farther Account of Hindoo Theology in the last Note to the Canna.*

PERSIAN THEOLOGY.

Plutarch has left us, in his Treatise of Isis and Osiris, a fragment of the theology of the Magi. This historian mentions, "that the ancient Persians adored but one sole supreme Deity, but they considered the God MYTHRAS and the Goddess MYTHRA sometimes as two emanations from his substance, and at other times as the first productions of his power. Every day was sacred to the great OROMAZES, because he was never to be forgotten: but the festival of the goddess MYTHRA was observed only towards the end of the spring, and that of MYTHRAS about the beginning of autumn. During the first, which lasted ten days, the women performed all the priestly functions, and the men did not assist at it; as, on the other hand, the women were not admitted to the celebration of the last. This separation of the two sexes was thought necessary, in order to preserve the soul from all imaginations which might profane its nature on these solemn festivals."

There is a fragment of Zoroaster preserved to us by Eusebius, which thus represents the Supreme Deity. "God is the first of all incorruptible Beings, eternal and unbegotten: He is not compounded of parts: there is nothing equal to him, or like him. He is the author of all good, and entirely disinterested; the most excellent of all excellent beings, and the wisest of all intelligent natures; the father of equity, the parent of good laws, self-instructed, self-sufficient, and the first former of nature."

He thus describes Heaven. "In the spaces of the Empyreum a pure and divine fire expands itself; by means of which, not only bodies but spirits become visible. In the midst of this immensity is the great OROMAZES, first principle of all things. He diffuses himself every where; but it is there that he is manifested after a more glorious manner. Near him is seated the God MYTHRAS, or the second * spirit, and under him the Goddess MYTHRA: around their throne in the first rank are the Jyngas, the most sublime intelligences; in the lower spheres are an endless number of Genii of all the different orders."

EGYPTIAN THEOLOGY.

PLUTARCH, in his treatise of ISIS and OSIRIS, tells us † "that the theology of the Egyptians had two meanings: the one holy and symbolical, the other vulgar and literal; and consequently that the figures of animals which they had in their temples, and which they seemed to adore, were only so many hieroglyphicks to represent the divine attributes. Pursuant to this distinction, he says, that OSIRIS signifies the active Principle, or the most holy Being;‡ ISIS the wisdom or rule of his operation; ORUS the first production of his power, the model or plan by which he produced every thing, or the archetype of the world."

They seem to have had a perfect knowledge of the supreme God. In the Temple of Neith there is found this inscription, "I am *one*, and from me all things proceed."

Plutarch adds, "The Egyptians, indeed, gave the names of Gods to several of the productions of the Deity, but their priests did not transform, dissolve, and scatter the divine Nature into rivers, winds, vegetables, or bodily forms and motions. This would be as ridiculous as to imagine, that the sails, the cables, the rigging, and the anchor are the pilot; or that the thread, the woof, and shuttle, are the weaver. Such senseless notions are an indignity to the heavenly powers, whom they blaspheme whilst they give the name of Gods to beings of an insensible, inanimate, and corruptible nature. "Nothing," as he goes on, "that is without a soul, nothing that is material and to be perceived by our senses, can be God. Nor yet must we imagine that there are different Gods. As the sun is common to all the world, though called by different names in different places; so there is but one sole supreme mind or reason, and one and the same Providence that governs the world, though he is worshipped under different names, and has appointed some inferior powers for his ministers." Such, according to PLUTARCH, was the doctrine of the first Egyptians with regard to the divine Nature.

ORIGEN, who was cotemporary with PLUTARCH, expresses himself thus, when writing against CELSUS. "The § Egyptian philosophers have sublime notions with regard to the divine Nature, which they keep secret, and never discover to the people but under a veil of fables and allegories. CELSUS is like a man who has travelled into that country; and though he has conversed with none but the ignorant vulgar, yet he takes it into his head, that he understands the Egyptian religion. All the Eastern nations, the Persians, the Indians, the Syrians, conceal secret mysteries under their religious fables. The wise men of all those religions see into the sense and true meaning of them, whilst the vulgar go no farther than the exterior symbol, and see only the bark that covers them."

GRECIAN THEOLOGY.

The learned among the Greeks had also true notions of God. First, of the Poets.

Orpheus rises to this sublime description of the unknown God.

"There is one *unknown*, exalted above, and prior to all other beings, the author of all things, even the æther, and of every thing that is below the æther. This exalted Being is Life, Light, and Wisdom; which three names express only one and the same Power, who formed all beings, visible and invisible, out of nothing."

Homer, notwithstanding the wild flights of his imagination, and the indecent allegories with which he often dishonours the divine Nature, has several sublime conceptions of the supreme God.

First, of the Place of God.

"O Father of mankind, superior lord!
On lofty Ida's holy hill ador'd;
Who in the *highest heav'n* has fix'd thy throne,
Supreme of Gods! unbounded and alone."

Il. vii. 241.

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* Νῆς δεύτερος it is thus that MYTHRAS is called in the oracles which pass under ZOROASTER's name. Doubtless they are not genuine; but they contain the most ancient traditions, and the style of the Eastern theology, according to PSELLUS, PLETHO, PLOTINUS, and all the Platonists of the third century.

† Plut. de Isid. & Osir. p. 354. ‡ Ibid. p. 373, 374, 375 § Orig. contra Cels. lib. 1. p. 11.

Secondly,

Secondly, his Power.

The Sire of Gods his awful silence broke,
The heav'ns attentive trembled as he spoke
" Celestial states, immortal Gods! give ear,
Hear our decree, and rev'rence what ye hear,
The fix'd decree which not all heav'n can move,
Thou fate! fulfil it; and ye pow'rs approve!
Let him who doubts me, dread the dire abodes;
And know th' Almighty is the God of Gods.
League all your forces then, ye pow'rs above,
Join all, and try the omnipotence of Jove:
Let down a golden everlasting *chain*,
Whose strong embrace holds heav'n, and earth, and main:
Strive all, of mortal and immortal birth,
To drag, by this, the Thund'rer down to earth:
Ye strive in vain! If I but stretch this hand,
I heave the Gods, the Ocean, and the Land;
I fix the chain to great Olympus' height,
And the vast world hangs trembling in my sight!
For such I reign, unbounded and above;
And such are men, and *Gods*, compar'd to Jove."
Th' Almighty spoke, nor durst the Pow'rs reply,
A rev'rend horror silenc'd all the sky;
Trembling they stood before the sovereign's look;
At length his best-belov'd, the pow'r of Wisdom spoke.
" Oh *first* and *greatest! God* by *Gods* ador'd!
We *own* thy might, our *father* and our *Lord!*"

Il. Book VIII. l. 5.

From the Greeks let us go to the Romans.

" O muse," says HORACE, " pursuant to the custom of our ancestors, let us celebrate first the great JOVE, who rules over Gods and men, the earth, the seas, and the whole universe: there is nothing greater than him, nothing that is like, nothing that is equal to him!"*

Let us pass from the *poets* to the *philosophers*, and begin with THALES the Milesian, chief of the Ionic school,† who lived above six hundred years before the birth of Christ. We have none of his works now left: but we have some of his sayings, which have been transmitted down to us by the most venerable writers of antiquity. ' God is the most ancient of all beings: he is the author of the universe, which is full of wonders:‡ he is the Mind which brought the chaos out of confusion into order;§ he is without beginning and without ending, and nothing is hid from him;‖ nothing can resist the force of Fate; but this Fate is nothing but the immutable reason and eternal power of Providence.¶

PYTHAGORAS is the second great philosopher, and chief of the Italic school. These are the notions of the Deity which he entertained.

' ** God is not the object of any of our senses, but invisible, purely intelligible, and supremely intelligent. His spirit is truth, his raiment is light. †† He is the universal Spirit that pervades and diffuseth itself over all nature. All beings receive their life from him. ‡‡ There is but one only God. He is the sole Principle, the Light of heaven, the Father of all; he produces every thing, he orders and disposes every thing; he is the reason, the life, and the motion of all beings.§§

SOCRATES was condemned to death for disbelieving in the Gods. He was, however, no atheist, for ZENOPHON has given us an excellent abridgment of the Theology of that Philosopher. It is perhaps the most important piece we have of antiquity. It contains the conversation of SOCRATES with ARISTODEMUS, who doubted of the existence of a God. SOCRATES makes him at first take notice of all the characters of design, of art, and of wisdom, that appear all over the universe, and particularly in the mechanism of the human body. " Do you believe,"‖‖ says he then to ARISTODEMUS, " can you believe, that you are the only intelligent being? You know that you possess but a little particle of that matter which composes the world, a small portion of that water which moistens it, a spark of that flame which animates it. Is understanding peculiar to you alone? Have you so engrossed and confined it to yourself, that it is to be found no where else? Does blind chance work every thing, and is there no such thing as wisdom besides what you have?" ARISTODEMUS having replied, ' that he did not see that wise Architect of the Universe;' SOCRATES answers him: " Neither do you see the soul which governs your own body, and regulates all its motions. You might as well conclude that you do nothing yourself with design and reason, as maintain that every thing is done by blind chance in the universe." ARISTODEMUS at length acknowledged a supreme Being, is still in doubt as to Providence; ' not being able to comprehend how the Deity can see every thing at once.' SOCRATES replies, " If the spirit that resides in your body moves and disposes it at its pleasure, why should not that sovereign Wisdom which presides over the universe be able likewise to regulate and order every thing as it pleases? If your eye can see objects at the distance of several furlongs; why should not the eye of God be able to see every thing at once! If your soul can think at the same time upon what is at Athens, in Egypt, and in Sicily, why should not the divine Mind be able to take care of every thing, being every where present to his work?" SOCRATES perceiving at last that the infidelity of ARISTODEMUS did not arise so much from his reasoning as from his debility of intellect, concludes with these words: " O ARISTODEMUS! apply yourself sincerely to cultivate knowledge, your mind will be enlarged, and then all your doubts will be removed!"

PLATO, a disciple of SOCRATES, follows the same principles. He lived about the hundredth Olympiad, at a time when the doctrine of DEMOCRITUS had made a great progress at Athens. The design of all his Theology is to give us noble sentiments of the Deity, to shew us that souls were condemned to animate mortal bodies, in order to expiate faults they had committed in a pre-existent state; and, in fine, to teach that social love is the only way to restore us to our first glory and perfection. He despises all the tenets of the Athenian superstition, and endeavours to purge religion of them. The chief object of this Philosopher is man in his immortal capacity; he speaks of him in his politic one, only to shew that the shorter way to immortality is to discharge all the duties of civil and social life from the pure love of virtue.

PLATO, in the beginning of his Timæus, distinguishes between the Being which is eternal, and beings which have been made.¶¶ And in another of his dialogues he defines ' God the efficient cause which makes men exist that had no being before:' a definition which shews that he

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* B. 1. Ode 12.
† Flor. Olymp. 1.
‡ Diog. Laert. vita Thal. lib. 1.
§ Cicer. de Nat. Deor. lib. 1. p. 1113. Edit. Amst. 1661.
‖ S. Clem. Alex. Strom. v.
¶ Stob. Ecl. Phys. cap. 8.
** Plut. Vita Num. and Diog. Laert. lib. 12.
†† Vit. Pyth. Porphyr.
‡‡ Lact. Inst. lib. 5.
§§ S. Just. Cohort. 1. ad. Grac. p. 18.
‖‖ Xen. Mem. Soc. Ed. Basil. 1579. lib 1. p. 573.
¶¶ Τὶ τὸ ὸν μὲν αἰεὶ, γένεσιν δὲ ουκ ἔ'χον και τι τὸ γιγνόμενον μὲν, ὄν δε ουδηποτε.

had an idea of creation. Nor is it at all surprising that he should have this idea, since it implies no contradiction. In reality, when God creates, he does not draw a being out of nothing, nor out of matter upon which he works; but he makes something exist which did not exist before.* The idea of infinite Power necessarily supposes that of being able to produce *new substances* as well as *new forms*. To make a substance exist, which did not exist before, has nothing in it more inconceivable than the making a form exist which was not before; for in both cases there is a new reality produced; and whatever difficulties there are in conceiving the passage from nothing to being, they are as puzzling in the one as the other. As therefore it cannot be denied but that there is a moving power, though we do not conceive how it acts; so neither must we deny that there is a creating power, because we have not a clear idea of it.

To return to PLATO. He first considers the Deity in his eternal beatitude before the production of finite beings. He says frequently, like the Egyptians, 'That this first source the Deity is surrounded with brightness, which no mortal eye can bear, and that this inaccessible God is to be adored only by silence.' (Thus our poet Thomson. 'But I lose myself in him, in light ineffable: come then expressive silence, muse His praise!') It is this first principle which he calls in several places the Being, the Unity, and the supreme Good;† the same in the intelligent world, that the sun is in the visible world. He afterwards represents to us this first Being as sallying out of his Unity to consider all the various manners by which he might represent himself exteriorly; and thus the ideal world, comprehending the ideas of all things, and the forms which result thence, was in the divine understanding. PLATO also distinguishes between the supreme Good, and that Wisdom which is only an emanation from him. 'That which presents truth to the mind,' says he, 'and that which gives us reason, is the supreme Good. He is the cause and source of wisdom. ‡ He hath begotten it like himself. As the light is not the sun, but an emanation from it; so truth is not the first Principle, but his emanation.' And this is what he calls the Wisdom or the LOGOS. And lastly, he considers the first Mover displaying his power to form real beings, resembling those archetypal ideas. He stiles him '§ The Energy, or sovereign Architect who created the universe and the Gods, and who does whatsoever he pleases in heaven, on the earth, and in the shades below.' He calls him likewise, 'PSYCHE, or the soul which pervades over the world, rather than the soul of the world;' to denote that this soul does not make a part of the universe, but animates it, and gives it all its forms and movements. Sometimes he considers the three divine attributes as three causes, at other times as three beings, and often as three Gods: but he affirms that they are all but one sole Divinity; that there is no essential difference between them; that the second is the resemblance of the first, and the third of the second; that they are not three Gods, but one: and that they differ only as the sun, the rays, and the light.‖

In other places, and especially in the Timæus Locrus,¶ PLATO speaks of three other Principles, which he calls, Ἰδέα, Ὕλη, Αισθητύς. By the first he understands the archetypal ideas contained in the divine Intellect: by the second, a primary matter, uniform, sluggish, inert, without figure or division, but capable of receiving all forms and motions: by the third, the visible universe, bounded, corruptible, consisting of various parts; and this he stiles the son, the effect, and the work of the idea as the primitive father, and of the Ὕλη as the universal mother of whatever exists. We ought never to confound these three principles of nature with the three forms of the Divinity, which he calls AGATHOS, LOGOS, and PSYCHE; the sovereign *Good*, which is the principle of Deity, the *Intellect* which drew the plan of the world, and the *Energy* which executed it.

ARISTOTLE, PLATO's disciple, and chief of the Peripatetic Philosophers, calls God ** 'The eternal and self-existing Being, the most noble of all things, a spirit entirely distinct from matter, without extension, without division, without parts, and without succession; who understands every thing by one single act, and continuing himself immoveable, gives motion to all things, and enjoys in himself a perfect happiness, as knowing and contemplating himself with infinite satisfaction.' In his metaphysics he lays it down for a principle,†† "That God is a supreme Intelligence which acts with order, proportion, and design; and is the source of all that is good, excellent, and just.' In his treatise of the soul, he says, 'That the supreme Mind ‡‡ is by its nature prior to all beings, that he has a sovereign dominion over all.' And in other places he says, §§ 'That the first Principle is neither the fire, nor the earth, nor the water, nor any thing that is the object of sense; but that a spiritual substance is the cause of the universe, and the source of all the order and all the beauties, as well as of all the motions and all the forms which we so much admire in it.'

CICERO, when in the height of argument, forget the popular creed, and gave loose to his own sentiment, and thus speaks of God.

‖‖ "According to the opinion of the wisest and greatest men, says this Philosopher, the law is not an invention of human understanding, or the arbitrary constitution of men, but flows from the eternal Reason that governs the universe. The rape which TARQUIN committed upon LUCRETIA, continues he, was not less criminal in its nature, because there was not at that time any written law at Rome against such sort of violences. The tyrant was guilty of a breach of the eternal law, the obligation whereof did not commence from the time it was written, but from the time it was made. Now its origin is as ancient as the divine Intellect: for the true, the primitive, and the supreme law is nothing but the sovereign reason of the great JOVE. This law, says he in another place,¶¶ is universal, eternal, immutable. It does not vary according to times and places. It is not different now from what it was formerly. The same immortal law is a rule to all nations, because it has no author but the *one only God* who brought it forth and promulged it.'

St. Paul, when at Athens, mentions that there was a statue, with an inscription, denoting it to be the *unknown* God.

To come at last to SENECA the Stoic. He was NERO's tutor, and lived in an age when Christianity was not in credit enough to engage the heathens to borrow any philosophical principles from thence. *† 'It is of very little consequence,' says he, 'by what name you call the first Nature, and the divine Reason that presides over the universe, and fills all the parts of it. He is still the same God. He is called JUPITER STATOR, not as historians say, because he stopped the Roman armies as they were flying, but because he is the constant support of all beings. They may call him FATE, because he is the first cause on which all others depend. We Stoics call him sometimes Father BACCHUS, because he is the universal life that animates nature; HERCULES, because his power is invincible: MERCURY, because he is the eternal Reason, Order, and Wisdom. You may give him as many names as you please, provided you allow but *one* sole Principle every where present.'

That the Greeks and Romans had a knowledge of God is certain. JUPITER is, according to their philosophers, the soul of the world, who takes different names, according to the different effects which he produces. In the ethereal spaces he is called JUPITER, in the air JUNO, in the sea NEPTUNE, in the earth PLUTO, in hell PROSERPINE, in the element of fire VULCAN, in the sun PHŒBUS, in divination APOLLO, in war MARS, in the vintage BACCHUS, in the harvest CERES, in the forest DIANA, and in the sciences MINERVA. All that crowd of Gods and Goddesses are only the same JUPITER, whose different powers and attributes are expressed by different names. It is therefore evident, by the testimony of prophane poets, Heathen philosophers, and fathers of the church, that the Pagans acknowledge *one* sole supreme Deity. The Oriéntals, the Egyptians, the Greeks, the Romans, all were agreed universally in allowing this sublime truth.

But can we believe, that several gods were not the objects of popular worship, and that the common people had a knowledge of the one only God? Did they see through the veil, which concealed the omnipotent, and only Béing? Did they not worship the creature for the Creator, a multitude of allegoric, and ideal, unexisting, Beings, instead of the former of the Universe, the Lord of All!! Vide the Travels of Cyrus, by Ramsay, and Abbé Pluche's origin of the Heathen Religion, in his Histoire du ciel consideré selon les idées des Poetes, &c.

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* Ποιητικην πᾶσαν ε'φαμεν εῖναι δύναμιν ἡ' τις ἀ'ν ἀιτια γιγνηται τοις μη πρότερον ουσιν ὑ'στερον γιγνεσθαι. Plat. Sophist. p. 185. Ed. Franc. 1602.

† De Repub. lib. 6. page 686. ‡ De Repub. lib. 6. p. 687. Τοῦτον τοίνυν φᾶναι με λέγειν τὸν του ἀγαθου ἔκγονον ον ταγαθὸν ἐγένησεν ἀνάλογον ἑαυτω.

§ Plat de Repub. lib. 10. p. 749. Δημιουργὸς and not δημιουργού μενον ψυχὴ ἱπερκόσμιος, and not ἐγκόσμιος. ‖ See Cudworth Intellect. Syst. p. 580. to 590.

¶ Tim. Loc. p. 1089. ** Arist. Ed. Paris 1629. Metaph. lib. xiv. cap. 7. p. 1000. †† Metaph. lib. xiv. cap. 10. p. 1005. ‡‡ Id. de Anim. lib. 1. cap. 7. p. 628.

§§ Metaph. lib. 1. cap. 2. & 3. p. 844, 845. ‖‖ Cic. de Leg. lib. 2. p. 1194. ¶¶ Frag. of the Repub. of Cicero preserved by Lactant. lib. vi. c. 8.

*† Senec. Edit. Ant. a Lipsio 1632. de Benef. lib. iv. p. 311.

Henderson pinx^t. Burke & Lewis sculp^t.

The Sacred Egyptian Bean

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NYMPHÆA NELUMBO;

OR,

SACRED EGYPTIAN BEAN.

In hot climates, where water is the best boon of Heaven, flourish the several kinds of Nymphæas. These present the purest colours, and are of an azure *blue*, or blushing *red*, or pale *yellow*, the three primary colours, and also of a dazzling *white*, all which majestically, (different from our humble aquatics), rise with their foliage above the surface of the flood, and present their luxuriant leaves to the vaulted heavens. Nature, as if designing these plants to be the masterpiece of her creative power, besides superior grace and beauty, has also added utility; for the *seed-vessels* contain nourishing food for man, as also the *roots*, which produce, as will be hereafter shewn, the profitable *potatoe*. As the Egyptians worshipped whatever was useful, they accounted these plants sacred; in their feasts they crowned themselves with the flowers, and their altars are decorated with the same. The Egyptian Ceres has the seed-vessel of the blue lotos in her hand, which the Romans corrupted into the poppy; and sometimes also that of the Nelumbo, which the Greeks mistook for the horn of Amalthea. The subject of this narrative, however, relates wholly to the Nymphæa Nelumbo, which some modern naturalists, instead of reckoning as a Nymphæa, have formed it into a distinct genus; for its *calyx*, instead of being large, consists of four narrow leaves, and the *corolla* is more multiplied than in the other water-lilies, and, wholly unlike other nymphæas, it has *stamina* with *anthers*, on long and slender *filaments*, and its *seed-vessel*, like an inverted cone, is flat at the top, and pierced with hollows, like an honey-comb, for the reception of its beans, or seeds.

The following Eastern Hymn transfused into the English tongue by Sir William Jones, gives us the antiquity of the flower of the Nelumbium, as received among the *Asiatics:*

AN HINDOO HYMN.

Spirit of spirits, who, through every part
Of space expanded and of endless time,
Beyond the stretch of lab'ring thought sublime,
Bade *uproar* into *beauteous order* start,
    Before heaven was, thou art:
Ere spheres beneath us rolled, or spheres above,
Ere earth in firmamental ether hung,
Thou sat'st *alone*; till, through thy mystic *love*,
Things unexisting to *existence* sprung,*
    And grateful descant sung.

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* The mythology of the Hindoos referred all to *one primitive* God.

What first impell'd THEE to exert THY might?
*Goodness** unlimited.—What glorious light
THY power directed? *Wisdom* without bound.—
What *proved* it first? Oh! guide my fancy right;
Oh! raise from cumbrous ground,
My soul in rapture drowned,
That fearless it may soar on wings of fire;
For THOU, who only know'st, THOU only canst *inspire.*

First an all-potent, all-pervading sound
Bade flow the *waters*†—and *the waters flowed,*
Exulting in their measureless abode,
Diffusive, multitudinous, profound,
Above, beneath, around.

Then o'er the vast expanse, primordial *wind*‡
Breathed gently till a lucid bubble rose,
Which grew in perfect shape an *Egg*§ refined;
Created substance no such lustre shews,
Earth no such beauty knows.
Above the warring waves it danced elate,
Till from its bursting shell, with lovely state,
A *form cerulean* fluttered o'er the deep,
Brightest of beings, greatest of the great,
Who not as mortals steep
Their eyes in dewy sleep,

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* They rose to that sublime conception, GOD is LOVE.

† From chaos the *flux of water* is the first action or energy.

‡ The next creation by the Deity is the *wind.* "And the Spirit of God moved on the face of the deep." MOSES.

§ Thus the Greeks, but with less grandeur, represent their *Cupid* as coming out of the great *Egg* of *Night,* which floated in *Chaos* and was broken by the horns of the celestial *Bull.* He is represented winged, and by his arms and torch pierced and vivified all things, producing every where life and joy. This Cupid is called *Eros,* or Divine Love. "At this time," says Aristophanes, "sable-winged *Night* produced an *Egg,* from whence sprung up, like a blossom, *Eros,* the lovely, the desirable, with his glossy golden wings."

Thus when the *Egg* of *Night,* on *Chaos* hurl'd,
Burst, and disclosed the cradle of the world;
First from the gaping shell refulgent sprung
IMMORTAL LOVE, his bow celestial strung;—
O'er the wide waste his gaudy wings *unfold,*
Beam his soft smiles, and *wave* his curls of gold;—
With silver darts HE *pierced* the kindling frame
And *lit* with torch divine the ever-living flame."
DARWIN.

But,

But, pensive, on the lotos-leaf* he lay,
Which blossomed at his touch, and shed a golden ray.†
Hail *primal blossom!* hail empyreal gem!—
KEMEL or PEDMA, or whate'er high name
Delight THEE, say what powerful *Godhead* came,
With graceful stole, and beamy diadem,
Forth from the verdant stem?—

Full-gifted BRAHMA.—Rapt in solemn thought,
HE stood, and round his eyes fire-darting threw:
But, whilst HIS viewless *origin* HE sought,
One plain HE saw of living waters, blue,
Their spring, nor sum, he knew.

Then, in th' expanded leaf again retired,
With restless thought, for hours he inquired
What were *his powers*, by *whom*, and *why* conferred:
With doubts perplexed, with keen impatience fired,
He rose,—and rising, heard
Th' unknown, all-knowing word—
" BRAHMA! *no more in vain research persist:*
" *My veil thou canst not move. Go, bid all forms exist.*"‡

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* Did the appearance of water naturally suggest without creation a Nelumbium, or lotos, in it? The leaf is large and hollow, in shape like an umbrella inverted by the wind, and as if fashioned for the reception of a God.

† *The first action of Brahma, was the creation of the flower of the Nelumbium.* Sir William Jones uses, perhaps, the word *golden* for beautiful. Is the *yellow* Nelumbium a native of any other climate than *America?* With a painter's licence, I have introduced the *white, red,* and *yellow* together, and placed them all in Egypt, which occasioned the following beautiful impromptu lines to be returned me upon presenting the first impression from the above plate to a charming poet.

ON DR. THORNTON'S BEAUTIFUL PLATE OF THE SEVERAL NYMPHÆAS.

FAIR offspring of benignant Nile
Watering old Egypt's fertile plains,
Where cloudless skies diffuse their smile
O'er long lost glory's rude remains;

Here, nursed amid fictitious waves,
Its head thy sacred blossom rears;
While, smiling by thy kindred side,
NELUMBIA's *rosy* form appears.

And, wafted o'er th' Atlantic main,
From far Columbia's purling streams,
Thy younger sister *joins the train,*
And, bright in *golden* beauty, gleams.

But say; could painting's magic power
Catch these bright tints of nature's loom?
Did *Nile* or *Ganges* rear the flower,—
Or *Thornton* bid its beauties *bloom?*

SHAW.

‡ By his *own energies,* and *the creation of things,* he would rise to comprehend somewhat of the *King of Kings,* the *God of Gods,* the *Invisible Being,* by, and in whom, are all things.

Then BRAHMA his own mind surveyed,
Ere *spirits were infused,* or *forms displayed,*
As mortal eyes, if finite we compare
With infinite, in brightest mirrors gaze,
Swift, as is thought*, a shape supremely fair
Rose into being, with a boundless blaze
That fifty suns might daze.
Primeval MAYA was the *Goddess* named,
Who, to her lord with *love divine*†, inflamed,
Her thoughts divulged, with richest wisdom filled,
From which this gorgeous universe HE framed;
For when great BRAHME *willed*
Unnumbered worlds to build
From *unity diversified*‡ HE sprang,
Then gay Creation laughed, and procreant Nature rang.

OMNISCIENT SPIRIT! whose all-ruling power
Bids from each sense bright emanations§ *beam*;
Glows in the rainbow; *sparkles* in the stream‖;
Smiles in the bud*; and *glistens* in the flower
That crowns each vernal bower;
Sighs in the gale; and *warbles* in the throat
Of every bird that hails the blooming spring,
Or tells his loves in many a liquid note,
Whilst envious artists touch the rival string,
Till rocks and forests ring;
Breathes in rich fragrance from the sandal-grove,
Or where the precious musk-deer, playful, rove;
In *dulcet juice* from clustering fruit *distils*;
And *burns* salubrious in the tasteful clove;
Soft banks and verdurous hills
THY *present influence* fills;
In air, in floods, in caverns, woods, and plains,
THY will inspirits *all,* THY sovereign MAYA† reigns.

JONES.

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* A fine conception of the *first operation* of the *heavenly mind.*

† BRAHME is believed by the Hindoos to be *neuter,* BRAHMA and MAIA are masculine and feminine.

‡ Still all is referred to *God,* or BRAHME.

§ In *sluggish matter* there is *no thought.*

‖ Not *properties* existent in *matter.*

* Smiles in the bud! how enchanting the whole account!

† MAIA (the Minerva of the Greeks, who is said by them to have been born from the head of Jupiter), means sovereign *goodness* and *wisdom.* The Hindoos believe also in an *evil spirit* which wars against the innocent joys of life, and produces the miseries incident to humanity, and all the convulsions of nature, and *Brahma* is employed, sometimes appearing upon earth, to counteract this evil. There is a fine Hindoo Avatar, or descent of *Brahma,* representing the deluge, when *Brahma* appears in the shape of a fish, and having procured from the body of *Typhon,* the holy books, presents them to BRAHME.

On the *Nelumbium*, as related to *Egypt*, I have been favoured with the following lines from a well known poet, almost equally distinguished as the last for his deep mythological acquaintance with the ancient and modern eastern world.

EMBLEM sublime of that primordial pow'r,*
That on the vast abyss of chaos mov'd,
What pen shall paint thy charms, majestic flow'r!
By mortals honour'd and by gods belov'd!

From Ethiopia's lofty mountains roll'd,
Where Nile's proud stream through gladden'd Egypt pours,†

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* The Spirit of God *brooding* over the chaos, and animating matter, is mentioned by Moses; and in the Egyptian and Hindoo cosmogony the *Lotos* is an emblem of that circumstance.

† The Nelumbium, Faba Ægyptica, or Sacred Egyptian Bean, is not to be met with at present in Egypt. That it was an inhabitant there we learn from the following particular: "Alexander, when he reached," says his historian Arrian, "the river Indus, believed he had discovered a branch of the Nile. This mighty stream was called Indus, from the country it passes through, as the Nile is called Ægyptus by Homer, and both originated from the same source; and he was confirmed in this from finding *crocodiles* in the stream of the *Indus*, and *beans* growing on its banks *similar* to those which grew on *the shores of the Nile*." Arrian, lib. 6. cap. 1. We have also other proofs.

Parkinson, who published in 1640, gives us the following account, p. 375. "The *Beane of Egypt*, which some call the Beane of Pontus saith Dioscorides (but Theophrastus mentioneth neither Egypt nor Pontus, but only calleth it a beane) groweth in lakes and standing waters (*plentifully in Egypt* saith Dioscorides, which Theophrastus speaketh not of) in Asia, that is in Syria and Cilicia, but there, saith Theophrastus, it doth hardly perfect its fruite, but about Torona, in the lake, in the country of Calcidicum, it cometh to perfection, and beareth very large leaves (like those of the butter-burre, saith Dioscorides); the stalke, saith Dioscorides, is a cubite long; Theophrastus saith the longest is foure cubits high, of the bigness of ones finger, like unto a soft reede, but without joynts: it beareth a flower twice as large as that of the poppy (with double flowers, for so I interpret in *plenum caput*, the words of Theophrastus), of the colour of the rose; after which is past cometh a round head called *ciborion*, or *cibottion*, that is, a small caske (yet Athenæus saith that a kinde of drinking cup was so called also, whose forme peradventure was like this fruite here expressed), not unlike to the comb which waspes do make, wherein is contained thirty cells at the most, and in every cell or division thereof groweth a beane, whose toppe riseth higher than the cell wherein it is enclosed, whose kernell is bitter; which say they, the inhabitants thereabouts put into clay, and thrust downe to the bottome of the water, with long poles, that it may abide therein and thereby make their increase: the roote is very thicke and great, like unto that of the reede, but (Theophrastus addeth, which Dioscorides hath not) full of cruell prickes or thornes, and therefore saith he, the crocodile refuses to come near it, least he should runne against the prickes thereof with his eyes, wherewith he cannot see well, and is called *colocasia* as Dioscorides maketh mention, but not Theophrastus, which is used to be eaten either raw or otherwayes dressed, that is sodden or roasted. The beanes, saith Dioscorides, are eaten while they are fresh and greene, but grow hard and blacke when they are old, being somewhat bigger than an ordinary beane, which saith Dioscorides (Theophrastus making no mention of any qualities or virtues of them), have an astringent or binding faculty, and thereby profitable to the stomacke, and helpeth those that have the fluxe of the stomacke and the belly, and the bloody fluxe, the meale or flower of them strawed upon meate, &c. or taken in broth: the husks whereof, saith he, doth more good, being boyled in sweete wine, the middle part of the beane, which is greene and bitter, being bruised and boyled in rosewater, and dropped into the eares, easeth the paines of them. Thus farre Theophrastus and Dioscorides. Now the description of Clusius his strange fruite is thus, as he setteth it downe: This fruite did resemble a very large poppy head, cut off at the toppe, and consisted of a rough or wrinkled skinny substance, of a brownish colour somewhat light, whose circumference at the top was nine inches, and growing lesser and lesser by degrees unto the stalkes, which as it seemed did sustaine the flower, after which came this fruite, for there appeared certaine markes of the flower, where it did abide; the upper part hereof was smooth and plaine, having twenty-four holes or cells therein, placed in a certaine order, like unto the combe of waspes; in every one whereof was one nut, like unto a small akorne, almost an inch long, and an inche thicke in compasse, whose toppe was browne, ending in a point, like as an akorne doth, the lower part having an hole or hollow place, where it should seeme the footstalke upheld it, while it was in its place, whose kernell was rancid or mouldy; thus farre Clusius. Let me here also bring in an eye witness or two, of this plant's growing in the ile of Java, Dr. Justus Heurnius, both divine and physition for the Dutch factory in the kingdome or ile of Java, sent into Holland a small booke or collection of certaine herbes, &c. growing in that country, with the virtues and uses, whereunto the naturals did apply them (which booke, as I understand by my good friends, Dr. Daniel Heringhooke, and Dr. William Parkins, both English, is kept in the university library at Leyden, in a close cupbord, having a glasse window before it, through which any one may reade so much thereof as lyeth open), at the end whereof is one by him set downe, under the name of *Nymphæa glandifera*, thus described: the huske or cup (saith he) is rugged or full of wrinkles, yet soft, loose and spungye, like a musroome, and of a greene colour, divided into twelve or fourteen cells (Clusius his figure hath twenty-four) or places, in every one whereof is contained one fruite like unto an akorne, of a blackish purple colour on the outside, and very white within, the taste whereof is astringent, and somewhat bitter withal, like akornes, but rough and spongie; it groweth in moorish places, and by river's banckes: the leaves are wondrous great, and like unto those of the water lilly, and so is the flower also of a very strong smell, like unto the oyle of aniseedes: thus farre Dr. Heurnius, whose description in my judgment is so punctuall to those of Dioscorides and Theophrastus aforesaid, the description of the roote onely wanting, that I shall not neede further to comment upon it, every ones judgment, though meane, I suppose being able by comparing to agree in the parts. It is probable that Clusius, having seene this booke and the figure hereof annexed to the description, might soone pronounce it (as I doe here) to be the true *Faba Ægyptica* of the ancients: there is no mention made in that booke of Heurnius by what name the Javaneses or Malayos doe call it. The other eye witnesse hereof is Mr. William Fincham, an English merchant, as he is recorded in Mr. Purchas his fourth booke of Pilgrimes, chap. iv. sect. v. p. 429, that

In raptur'd strains thy praise was hymn'd of old,*
And still resounds on Ganges' faithful shores.†

Within thy fair corolla's full-blown bell‡
Long since th' immortals fix'd their fond abode;
There day's bright source, *Osiris*,§ lov'd to dwell,
While by his side enamour'd *Isis* glow'd.

---

saith he often did eate of the fruite of a certaine herbe growing in a great brooke or lake, two or three courses or miles long, on the north-west side of Fettipore, which is about twelve courses from Agra, in the dominions of the great Mogoll, called Surrat or Guzurrat, in the East Indies, which the people call *Camolachachery*, describing it to be like a goblet, flat at the head, containing divers nuts or akornes within it. I have here set downe these things, as well to show you mine owne observations after Clusius and others, that assuredly this is the true *Faba Ægyptica* of the ancients, as to provoke some of our nation to be as industrious as the Hollanders, by whose care in their travels this was first made known to us, to search out such rare fruites as grow in the parts of their abode, and either communicate them to such as are experienced, or having penned them to publish their labours in print, if it may be, which I hold to be better, according to Mr. Fincham's example, whose observations have given so great an illustration in this matter, as well as in other things, by me also remembered elsewhere in this worke."

* Paganism at first arose from *gratitude*, and the adoration of this flower, as will be presently shown, proceeded chiefly from this cause. Among the Egyptians, animals as well as flowers, which were useful, were among the objects of worship. Cicero judiciously remarks, " that no animals were held sacred by the Egyptians, but such as merited regard from their extraordinary utility." The same sentiment holds exactly with regard to their sacred plants.

" Ægyptii nullam belluam, nisi ob aliquam utilitatem quam ex eâ caperent, consecrârunt velut Ibes, maximam vim serpentium conficiunt, cum sint aves excelsæ, cruribus rigidis, corneo proceroque rostro; avertunt pestem ab Ægypto, cùm volucres angues, ex vastitate Lybiæ, vento Africo invectas, interficiunt atque consumunt, ex quo fit ut illæ nec morsu vivæ noceant nec odore mortuæ; eam ob rem invocantur ab Ægyptiis Ibes." *Cic. de Nat. Deor, lib.* 1.

The idols belonging to the aborigines Egyptians were birds, and beasts, and plants, which the Phœnicians altered, by adding a man's head or body, and thence formed those motley deities, commonly considered as the Egyptian deities. Vide *Origin of Hieroglyphics and the Mythology of the Ancients, by the Bishop of Clogher, p.* 14.

The only objection urged against this opinion, so favourable to the ancient Egyptian superstition, is the worship of the *crocodile*. " The inhabitants of Thebes consider the crocodile as a sacred animal. One of these creatures is rendered tame, and attended with the greatest care and veneration. His food is prescribed and regulated according to the directions in their sacred books. He is adorned with earrings made of gold, and precious stones, as well as a sort of bracelet upon his fore feet," &c. *Herodotus.* But it is probable he was worshipped as the great Typhon, or emblem of destructive power; and it is to be observed, that this superstition was peculiar to Thebes; whereas the Lotos, the Ibis, the Ichneumon, the Cow, &c. were held in superstitious veneration in every part of Egypt.

† When Sir William Jones was at dinner on the borders of the Ganges, some of his people, at his desire, brought him the Nelumbium, when all his Indian attendants immediately fell upon their faces, and paid adoration to this plant.

‡ The flower of the Nelumbium is bell-shaped, somewhat resembling our Water Lily, and its flowers are in circles, which as these expand emit a most agreeable odour.

§ The ancient Egyptians, like the primitive Persians, worshipped the *sun* and *moon*, or rather their *deities*, whence so many benefits issued to mankind. We are almost tempted to forgive that superstition which could believe these planets the abodes of a *god* and a *goddess*, whom they denominated by the names of *Osiris* and *Iris*. They sometimes quitted their supreme abodes, and came down upon earth and enjoyed themselves, by riding on a stately flower above the waters, blown about by the zephyrs; nor can we much wonder at such superstition, since we have had our *fairies*, and Anacreon the *Greek* poet describes *Cupid* alike diminutive.

As late I sought the spangled bowers,
To cull a wreath of matin flowers,
Where many an early rose was weeping,
In one I found the urchin sleeping:
I caught the boy, a *goblet's* tide
Was richly mantling by my side;
I caught him by his downy wing,
And whelm'd him in the racy spring.
Oh! then I drank the poison'd bowl,
And love now nestles in my soul;
Yes, yes, my soul is Cupid's nest,
I feel him fluttering in my breast.

MOORE.

Thus the Roman poet Virgil invokes the sun and moon as deities:

. . . . . Vos, O clarissima mundi
Lumina, labentem cœlo qui ducitis annum,
Liber, et alma *Ceres*.

Lycaon, whose wickedness was fabled to have hastened the destruction of the old world, was the father of Callisto. Her charms engaged the affections of Jupiter, but his jealous consort having discovered the amour, changed her into a bear, in which shape she is placed by Jupiter

Hence, not unconscious to his orient beam,
At dawn's first blush thy shining petals spread;
Drink deep th' effulgence of the solar stream,
And, as he mounts, still brighter glories shed.*

Jupiter in the sphere. Juno remaining implacable, prevailed upon Tethys, the wife of Oceanus, to withhold from this new constellation the privilege of setting beneath the waters of the sea. *Hyg. Poet. Astron. lib. ii.*

Homer paints the assembly of the Gods retiring each to his respective *star* at the fall of day.

Thus the blest Gods the genial day prolong
In feasts ambrosial and celestial song.
Apollo tun'd the lyre, the Muses round
With voice alternate aid the silver sound.
Meantime the radiant sun, to mortal sight
Descending swift, roll'd down the rapid light.
Then to their *starry* domes the Gods depart,
The shining documents of Vulcan's art:
Jove on his couch reclin'd his awful head,
And Juno slumber'd on the golden bed.

ILIAD, I.

Thus Augustus Cæsar is invoked by Virgil, as one who will become a new constellation.

And, chiefly thou, whose undetermin'd state
Is yet the business of the Gods' debate;
Whether in after times to be declar'd
The patron of the world, and Rome's peculiar guard,
Or o'er the fruits and seasons to preside,
And the round circuit of the year to guide.
Pow'rful of blessings, which thou strew'st around,
And with thy Goddess Mother's myrtle crown'd.
Or wilt thou, CÆSAR, choose the wat'ry reign,
To smooth the surges, and correct the main?
Then mariners in storms to *thee* shall pray,
E'en utmost *Thule* shall thy pow'r obey;
And *Neptune* shall resign the trident of the sea,
The wat'ry virgins for thy bed shall strive,
And *Tethys* all her waves in dowry give;
Or wilt thou bless our summers with thy rays,
And seated near the balance, poise the days,
Where in the void of heav'n a space is free,
Betwixt the Scorpion and the Maid, for thee,
The Scorpion ready to receive thy laws,
Yields half his region, and contracts his claws.

GEORG. *Book I.*

Each separate planet and star had its deity, hence the ancient doctrines of *Astrology*, or predicting the future fortunes of each as influenced by the *star* under which each person was born. Instead of supposing such influence to arise from the *God* or *Goddess* (a better notion) presiding over each star, the superstitious mind imagined the *influence* to come from inert masses of matter. Thus Milton, in compliance with the doctrines of the times, describes the ALMIGHTY, after the fall of man, commissioning his Angels to produce several changes in nature, and to sully the beauty and perfection of this nether world.

. . . . . To the blank *moon*
Her office they prescribed, to th' other *five*
Their planetary motions and aspects
In sextile, square, and trine, and opposite,
Of *noxious efficacy*, and when to join
In *synod unbenign*; and taught the fix'd
Their *influence malignant* when to shower.

* Theophrastus gives the following account of the Nelumbium in his history of plants. "It withdraws its flowers in the evening into the Euphrates, which continue to descend till midnight, to so great a depth, that at daybreak they are out of the reach of the hand; after which time it ascends gradually again, and in the course of the morning appears above water, and expands its flowers, rising higher and higher, till it gets several feet in height above the surface." Book iv. chap. 10. This descent and subsequent ascent of the Nelumbium is fully credited by Linnæus, and is even applied by him to our common Water Lily; but it probably arose from mistaking the dipping under water which takes place after impregnation of the germen, and the ascent of the virgin flowers the following morning, which was mistook for the closed ones descended yesterday.—But the flower opens and expands just as the day advances, and shuts up about four in the evening.

When, at their noontide height, his fervid rays,
In a bright deluge burst on Cairo's spires,
With what new lustre then thy beauties blaze,
Full of the god, and radiant with his fires!

Brilliant thyself, in stole of dazzling *white*,*
Thy sister plants more gaudy robes infold;
This flames in *red*, and that, intensely bright,
Amid th' illumin'd waters *burns in gold*.†

To brave the tropic's fiery beam is thine,
Till in the distant west his splendors fade;
Then, too, thy beauty and thy fire decline,
With morn to rise, in lovelier charms array'd.

What mystic treasures, in thy form conceal'd,
Perpetual transport to the sage supply;
Where nature, in her deep designs reveal'd,
Awes wondering man, and charms th' exploring eye.

In thy prolific *vase*, and fertile *seeds*,
Are trac'd her grand regenerative pow'rs;‡
Life, springing warm, from loath'd putrescence, breeds,
And lovelier germs shoot forth, and brighter flow'rs.

Thus, from Arabia borne, on golden wings,
The Phœnix on the Sun's bright altar dies;§
But from his flaming bed, refulgent, springs,
And cleaves, with bolder plume, the sapphire skies.

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* The subject of this poem is the white Nelumbium, which I saw in fine flower in the Royal gardens at Kew last August. The same Cowley says of the white lily, it seemed clothed in *light*.

† There are three *varieties* of this plant, or if we constitute it, with Jussieu, into a genus separate from the Nymphæas, by the term *Nelumbium*, or if we make it, with Linnæus, of the genus Nymphæa, we shall then have three distinct species of this beautiful aquatic, the *red*, *white*, and *yellow*. The leaves are in the shape, and of the size of an inverted umbrella, and majestically expand above the surface of the stream. The flowers rise gracefully among the foliage, and altogether constitute one of the grandest and most lovely objects in the creation. The *white* is dazzling, the *red*, and *yellow*, pure and unmixed.

‡ This plant, says a great mythologist, grows in the water; and, amongst its broad leaves, puts forth a flower, in the centre of which is formed the *seed-vessel*, shaped like a bell or inverted cone, and punctuated on the top with little *cavities* or *cells*, in which the seeds grow to maturity, decay, and again shoot forth; for, the orifices of these cells being too small to let the seeds drop out, when ripe, *new plants* germinate in the places where they are formed, the bulb of the vessel serving as a matrix to nourish them, until they acquire such a degree of magnitude as to burst it open and release themselves; after which, like other aquatic weeds, they take root wherever the current deposits them. This plant, therefore, being *thus productive of itself*, and vegetating from its own matrice, without being fostered in the earth, was naturally adopted as the symbol of the productive power of the Deity upon the waters. See Mr. Knight's Work, p. 85. The fact, however, is that, as with some few other seeds, the cotyledons, or seminal leaves, early manifest themselves, as in the radish, where the rudiments of the young plant may at any time be seen, and in that state are deposited into the soft prolific bosom of the earth, where they readily take instant root.

§ Dr. Darwin, in his *Temple of Nature*, says, p. 162, "that the Phœnix rising from its own ashes is an hieroglyphic emblem of the destruction and resuscitation of all things. It is represented with the *Dog-star* over its head.

"So when Arabia's bird, with age oppress'd,
Consumes delighted on his spicy nest,
A filial Pœnix from his ashes springs,
Crown'd with a star, on renovated wings;
Ascends exulting from his funeral flame,
And soars, and shines, another, and the same."

Nor food to the enlighten'd mind alone,–
Substantial nutriment thy root* bestow'd,
In famine's vulture fangs did Egypt groan,
From thy rich bounteous horn† abundance flow'd.

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* We learn from *Herodotus*, " that the Egyptians were fed by the root of the different Nymphæas which flourish in the waters of the Nile." He distinctly points out the two kinds. The one he describes " as producing a root of the size and shape of an apple, which kind had a seed-vessel of the form and shape of a poppy, containing seeds as small as millet, of which bread was made." This Lotos he discriminates " as resembling most a lily." He next speaks of " the other Lotos, whose flower is also of the lily kind, but more resembling the full-blown rose, the fruit of which imitates the nest of a wasp, and contains seeds of the size of an olive, and good to eat." *Euterpe, ch.* 29.

Theophrastus equally well describes both sorts. Speaking of the common Nymphæas he says, " The fruit is equal in size to a large poppy, and contains a great number of seeds similar to grains of millet. The Egyptians deposit the fruit in heaps, and suffer the vessels to putrefy: they then separate the seeds by washing them in the Nile, dry them, and make them into bread. The root, which is called *corsion*, is round and of the size of a guinea. Its rind is black, and like that of a chestnut. It is of a fine white in the inside, and is eaten either raw or boiled." *Hist. of Plants*, Book iv. Chap. 10.

Sonnini, a most intelligent traveller and learned naturalist, mentions, " that at the present day, the roots of the Lotos furnish the common people with their chief sustenance. The large tubers are gathered as the waters subside, and dried, and then eaten, boiled or roasted, like our potatoes, which they resemble in taste, but are more mealy." *Travels into Egypt.*

The roots of all the sorts are admitted by the Chinese to their tables, and the ponds and lakes are cultivated with the Nelumbium, which is one principal cause of the abundant population of that country. " In whatever way prepared it is equally pleasant and wholesome. Great quantities are pickled with salt and vinegar, which is then eaten with rice. Reduced to powder by grating, like our potatoe, it makes a most excellent flour." *Embassy to China by Lord Macartney.*

† The horn-like appearance of the seed-vessel of the Nelumbium so exactly resembles the *Cornucopia* of the ancients, that the Grecian Horn of Plenty seems to have been derived from this source. Their tradition states, that the nurse of Jupiter was the goat *Amalthea*, (a name derived from ἀμαλθεύω, to nourish), who for her services was afterwards turned into a star, and presented with the *Cornucopia*. The first food of man being bread and milk, gave origin to this Grecian fable, for their *Ceres* was nothing more than a corruption of the Egyptian *Isis*, who is represented in the temples of Egypt with the *seed-vessel of the Nelumbium* in her hand. Sometimes in Egyptian sculpture their *Iris*, or *Ceres*, is seen with the seed-vessel of the Nelumbium in the left arm, and some ears of corn intermixed with the seed-vessel of either the Nymphæa cærulea, or Nymphæa Lotos, in the right. The Greeks and Romans, who borrowed their religion chiefly from the Egyptians, not only mistook the *Cornucopia* for a real *horn*, but also the seed-vessel of the Lotos for that of the *Poppy*, to which it bears much resemblance.

The Egyptian *Isis* holds in her right hand a sphere, for the Egyptian priests taught that the earth was round (such was the doctrine of *Pythagoras*), this the more refined Greeks converted into a sickle, when she became their *Ceres*; and to represent the earth, they sometimes adorned her head with a *turret*, when she became *Magna Dea*, or *Cybele*; and instead of the cornucopia they increased the number of her breasts when she was made to represent abundant *Nature*.

That the Greeks derived their deities from the Egyptians we have not only the probability from the resemblance, but the direct confession of Herodotus, who visited the priests of both Heliopolis and Thebes; and he declares, " that the Grecian Theology is derived from the Egyptian." *Herod. Lib.* ii. *p.* 80.

As *Isis* was supposed by the Egyptians to inhabit the moon, as *Osiris* did the sun (the *Apollo* and *Bacchus* of the Greeks), hence they placed a crescent on her head when she became their *Diana*. Her chastity they fancied from the pale brightness or chill of the Moon, for as the Egyptian gods had each their wives and concubines, according to Eastern manners, the produce of *Osiris* and *Isis* was *Orus*, the *Mercury* of the Greeks.

Sometimes *Orus* is represented in Egyptian sculpture as a simple boy, sometimes, however, he is *Anubis*, or the Barking Dog, with a *Caduceus* in his hand, and wings to his feet.

The Egyptians, a race dealing in symbols, designed by *Anubis* vigilance, and at the commencement of the overflow of the Nile their priests presented this figure to them as a warning; the wings on the feet denoted the rapidity of the flood; the caduceus, the generation of serpents by the waters; and its two wings, the Etesian, or west wind, which sets in at that time.

The more refined Greeks did not at all relish such a figure of a god, and for the head of a dog they substituted a cap, and for the two ears placed two wings on the cap, covering a human head, but the other parts resemble the Egyptian figure.

The seed-vessel of the *Nelumbium* will furnish us also with another key to unlock the stores of ancient knowledge. *Pythagoras*, the introducer amongst his countrymen of the *Metempsychosis*, and who taught in symbols, has prohibited his disciples from eating *beans*, they might eat *peas*, but not *beans*; and in order to reconcile this seeming strange interdiction, " abstain from beans," has been interpreted to keep from political disputes, which were decided by lot; but Doctor *Priestley* says it is meant in the obvious sense of the words, as being very fattening food, and is a caution against corpulency. But as his golden rules were symbols, I am inclined to think that he alluded to the Egyptian bean. " Abstain from beans," meant against the indulging in any luxury to the detriment of the people; for by eating only thirty beans, thirty plants were destroyed, which would have furnished tubers (potatoes) for as many families, and this plant was dispersed by the bounty of Providence on the shores of the Nile, as food for the common people, and not sown by mortal hands. Hence it was, Egypt, abounding also in corn, became the granary of the world, and its store-houses furnished the neighbouring nations; and hence it was that the Romans represented on their medals *Ceres*, with a *ship* by her side, as denoting the transport of corn from Egypt.

To prove the rarity of the Nelumbium even in the time of *Adrian*, Athenæus relates (*Deipnosoph. lib.* iii. *p.* 73.) that it changed its appellation into *the Antinoian flower*. " A poet," says this historian, " presented the emperor Adrian with the ROSE LOTOS (*Nelumbium*) as a *rarity*, and accounts for its produce from the blood of that terrible lion called Antinoian, which had committed great devastation in Lybia, and was finally killed in Egypt by Adrian in hunting."

Strabo relates, that the *Nelumbium* was once very *common* in Egypt, and that during festivals on the water the barges rowed under the shade of its immense leaves, which greatly resemble a Thessalian cap. (*Lib.* xvii.)

Did

Did raging pestilence her shores invade
Wafted from burning Lybia's sultry plains,
Thy cooling seeds the ardent thirst allay'd
And check'd the fervor of the throbbing veins.*

Arm'd with thy foliage in the cool of day
Safe down the Nile the happy Memphians glide;
The charm'd Leviathan† forgets his prey,
And sports, innoxious, on the sacred tide.‡

Hence the immortal race§ in Thebes‖ rever'd,
Thy praise the theme of endless rapture made;
Thy image on an hundred columns rear'd,
And veil'd their altars with thine hallow'd shade.

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* "The roots and seeds of the Nelumbium," says Loureiro, "are both sapid and wholesome. These are accounted cooling and strengthening, and are found a specific against extreme thirst, diarrhœa, tenesmus, vomiting, and too great internal heat."

† The *Leviathan* of Job is the *crocodile*. "Canst thou draw out Leviathan with a hook?" is the question proposed, to shew the superior power of the Deity. His worship in Egypt is accounted for by some as representing *Typhon*, the sea, of which the Egyptians appear to have had a great dread, for by ships their enemies invaded their country. Another reason for this worship is given in note § below.

‡ All the Nymphæas have smooth stalks, except the Nelumbium, which is armed with short yet strong prickles, which piercing the eyes of the crocodile, is by them remembered, and on this account that animal shuns the appearance of the Nelumbium. That the crocodile avoids the Nelumbium is noticed by Herodotus.

§ The origin of all religion, as I observed before, originated in gratitude. "On this score," says Cicero, "the *Ibis* was esteemed sacred as a bird which destroyed serpents, and the *Ichneumon* as the devourer of the eggs of the crocodile, and the *crocodile* itself as protecting the Nile from the invasion of the Arabs," (Vide Cicero de Natura Decorum), but this homage to the *crocodile* was given only in some parts of Egypt; and, lastly, I might mention the *onion*, a bulb which vegetated out of its own matrix, like the Nelumbium, and as containing spheres within spheres, the true system of the world, so little did the Egyptians merit to be satyrized by Juvenal,

Porrum et *Cepe* nefas violare et frangere morsu.
O Sanctas gentes, quibus hæc nascuntur in hortis
Numina!

‖ Thevenot, a modern French traveller, thus describes ancient *Thebes*. "The works of the Egyptians," says this admired writer, "were calculated to withstand the corroding tooth of time: their statues were colossal, their columns immense. Egypt aimed at grandeur, and sought to strike the eye at a distance, but never also failed to gratify it by correctness of proportion. In the Saïd, (which was anciently called Thebaïs,) have been discovered temples and palaces, at this day almost entire, where these columns and statues are innumerable. The admiration of the traveller is particularly excited by a *palace*, the remains of which seem to have subsisted only to eclipse the glory of all the noblest modern works of art. Four alleys, extending farther than the eye can reach, and bounded, on each side, by sphinxes of a substance as rare as their size is remarkable, serve as avenues to four porticoes of most astonishing height. How magnificent! how stupendous! Indeed, those who have described to us this prodigious edifice, have not had time to examine its whole extent, nor are they even certain of having seen the half of its beauties; but all that they did see was truly wonderful.

"A saloon, which apparently formed the middle of this superb palace, was supported by more than an hundred columns, the circumference of each of which could not be spanned by six men with extended arms. These columns were lofty in proportion, and interspersed with obelisks which so many revolving ages have not been able to overthrow. Even the colours, which, from their nature, soonest experience the power of time, are still unfaded among the ruins of this admirable edifice, and display all their original brilliancy; so well did Egypt know how to impress the stamp of immortality on all her productions."

The city which the Greeks call *Thebes*, the Egyptians Diospolis, (says Diodorus, lib. i. par. 2.) was in circuit an hundred and forty *stadia*, adorned with stately buildings, magnificent temples, and rich donations. It was not only the most beautiful and noble city of Egypt, but of the whole world. The fame of its wealth and grandeur was so celebrated in all parts, that Homer has taken notice of it in these words:

- - - - - - - - - ἐὸ̃ ὅσα Θήβας
Αἰγυπτίας, ὅθι πλεῖστα δόμοις ἐν κτήματα κεῖται,
Λῖθ' ἑκατόμπυλοί εἰσι, διηκόσιοι δ' ἀν ἑκάστην
Ἄνέρες ἐξοιχνεῦσι ἵπποισι καὶ ὄχεσφιν. V. 381.

Though others affirm it had not an hundred gates, but as many vast porches to the principal temple; and that the city was called Hundred-gated, only as having many gates. Yet it is certain it furnished twenty thousand chariots of war; for there were an hundred stables along the river, from Memphis to Thebes towards Libya, each of which contained two hundred horses, the ruins whereof are shewn at this day. The princes from time to time made it their care to beautify and enlarge this city, to which none under the sun was equal in the many and magnificent

nificent treasures of gold, silver, and ivory; with innumerable colossuses, and obelisques of one entire stone. There were four temples admirable in beauty and greatness, the most ancient of which was in circuit thirteen *stadia*, and five-and-forty cubits in height, with a wall of four-and-twenty feet broad."

What history records of the buildings of the Egyptians would surpass credibility, were it not attested by their monuments, which remain to this day. Egypt is a scene of antiquities; walking among ruins, the traveller forgets the present to contemplate the past, and, amid the traces of a degenerate race, marks the remains of a mighty nation. Their buildings are still sublime. The *Pyramids* of Egypt have always ranked among the wonders of the world. Three of them still remain, at the distance of some leagues from Grand Cairo, where Memphis formerly stood. The largest of the three, called the Great Pyramid, forms a square, each side of whose base is 660 feet. The circumference is 2640 feet. The basis covers eleven acres of ground. The perpendicular height is about 450 feet; if measured obliquely, 700. The summit, which viewed from below appears a point, is a platform, each side of which is 18 feet long. The stones with which this enormous edifice was built were 30 feet in length. A hundred thousand workmen were constantly employed in carrying on this amazing structure. Thirty years were spent in erecting this immense fabric. The sum expended for food to the workmen amounted to 1600 talents, which, comparing the value of money in those days with what it is at present, amounts to more than two hundred thousand pounds sterling.

The original destination of these most ancient monuments of human ingenuity, and which are likely to last coeval with the works of Nature, according to the testimony of all antiquity, was to contain the embalmed bodies of the first monarchs of Egypt. The observation of Strabo, that towards the middle of the height of one of the sides, by raising a stone, an oblique passage is opened, which leads to the coffin of a king, in the centre of the pyramid, forms a striking proof of the ancient belief on this subject, and is confirmed by every observation which has been made on these stupendous structures. The Egyptians not only believed in the immortality of the soul, but also in the reanimation of the body, after a long period of years: hence their extraordinary attention to embalm and preserve the uncorrupted bodies of their departed heroes and deceased friends.

These majestic monuments descend from an unknown antiquity. Herodotus, who wrote 2000 years ago, speaks with as much uncertainty about the time when they were constructed as we do at present.

Other proofs remain of their very high antiquity. While all the remarkable edifices in Egypt are covered with hieroglyphical inscriptions, no traces of that Egyptian mode of writing appears on the pyramids, because they were erected before hieroglyphical writing was cultivated. A stronger proof of their age still remains. The general idea of Egyptian architecture was entirely taken from the pyramids; which nothing but their high veneration for them, increased by their remote antiquity, could possibly have occasioned; since the figure of these fabrics, so well adapted to triumph over time, is inconvenient for habitable structures, whether public or private. Yet we find, from the ancient ruins of the Higher Egypt, that all the buildings, without exception, were raised on the model of the pyramids. We are surprised to find not only their ports, their doors, but even the walls of their towns, inclining to this form.

The *Labyrinth* was, if possible, more astonishing than the pyramids. The same circuit of walls inclosed 3000 apartments, twelve of which were of a particular form and beauty. They communicated with each other by so many turns and windings, that without a guide the traveller was lost. One half of the chambers was under ground: the labyrinth terminated in a pyramid forty fathoms high.

The *Obelisks* are in the same grand style, but of a singular composition. The first models were erected by Sesostris, as monuments of his victories: they consisted of one piece of granite, and were 180 feet high. The Romans, in the era of their grandeur, transported some of these monuments to their city; two of them still remain, and, for their antiquity and grandeur, rank among the greatest curiosities in Rome.

Works of a similar form, or in the same style with the pyramids of Egypt, were found at Babylon, and in several parts of the east.

The fine arts are imitative: the great original is nature. In the early periods of society, before the earth is cultivated and improved by the human hand, the works of nature strike by their greatness, rather than please by their beauty: hence an incorrect idea of grandeur prevails in the first compositions of all nations of whatever kind. Aiming at the vast and the gigantic, they study to fill the eye, rather than to please it.

But what astonishes us most is, that these massy piles actually related to *Astronomy*, for these were in truth gnomons for astronomical purposes; and it is equally certain that their pyramids corresponded exactly to the four cardinal points. They were the first people of antiquity who adjusted the length of the year to the annual revolution of the sun, and determined it to consist of 365 days, and six hours. From them the Greeks, and other nations, learned the true duration of the solar year. They seem to have attained a right notion of the system of nature; for they called the moon an ethereal earth, affirmed the fixed stars to be fire, and placed the sun immoveable in the centre of the world, round whom the inferior planets revolved. This system Pythagoras introduced into Greece, and communicated to his disciples.

Before I conclude with the account of the gigantic architecture of the Egyptians taken chiefly from the Travels of Pocock, the reader may possibly not be displeased if I state here the dimensions of a vast colossal *Statue*, which Pocock discovered in some ruins, which he has ably described and accurately measured. It will rescue from the suspicion of hyperbole the account given by Niebuhr, of the dimensions of the grand bust in the Elephanta cavern, the centre face of which alone measured in length five feet; that of the same face the nose measured one foot and a half; that the width, from the ear only to the middle of the nose, was three feet four inches; and that the stupendous breadth of the whole figure, between the shoulders, was near twenty feet. Vide *Maurice's Indian Antiquities*, with a Plate of this Bust and description, in Vol. III. p. 220.

"This large colossal statue," says Dr. Pocock, "is broken about the middle of the trunk: the head is six feet broad: from the top of the head to the bottom of the neck it measures eleven feet, and so it does from the bottom of the neck to the navel. It is twenty-one feet broad at the shoulders, the ear is three feet long and one foot four inches broad, and the foot is four feet eight inches broad." In another court of this ruined temple he saw the remains of "two statues of black granite: that to the west, which is in a sitting posture, measured, from the hands only to the elbow, five feet; and thence to the shoulder four feet. The statue, on the east, is three feet five inches long in the foot: lying at a distance from it was the head, with the cap: it is three feet six inches long; and the ear is one foot in length." If admiration should be excited in the mind of the reader, on perusing the account of the dimensions of these statues, to what an exalted point will his astonishment be elevated, when he casts his eye upon the subsequent page, descriptive of the celebrated statue of MEMNON, standing upon a pedestal, which is alone above thirty feet in height, and in width near twenty feet! I need not acquaint the classical reader, that this is the famous statue erected in the temple of SERAPIS, which is affirmed, on the first appulse of the beam of the orient sun, to have emitted a distinctly audible sound. It is represented, by Dr. Pocock, as composed of a particular sort of porous dark granite, such as he never saw before, and much resembling the eagle-stone. The statue itself is broken; but of the whole amazing mass, the fabrication of which one would think must have exhausted a quarry, some idea may be formed from the magnitude of the leg and foot, still remaining entire. Of these an engrav-

ing,

But far beyond the bounds of *Afric* borne,
Thy honors flourish'd mid *Thibetian* snows,
Thy flowers the *Lama's** gilded shrine adorn,
And *Brahm*† and *Buddha*‡ on thy flow'r repose.

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ing, entirely covered with the inscriptions of Greek and Roman travellers, who bore their attestation to its having sent forth such a sound on the rising of the sun, (this arose probably from Egyptian priestcraft), appears opposite to page 140 of his first volume; and he found the height of the leg, " from the bottom of the foot to the top of the knee, to be about nineteen feet; from the bottom of the foot to the ankle, two feet six inches; to the top of the instep, four feet; the foot itself being five feet broad, and the leg four feet in depth."

Stupendous as these mensurations must appear, even these appear comparatively small, when we consider what is related in Pliny, concerning the wonderful SPHYNX; for that writer affirms, that the head was no less than one hundred and two feet in circumference; that the figure itself was sixty-two feet high from the belly to the crown of the head; and that its entire length was 143 feet. This figure also had its meaning. It related to the inundation, or overflowing of the Nile, which happened in the middle of the month LEO (*the Lion*), and reached to the month VIRGO (*the Virgin*). He who could discover the *ænigma* was honoured by the priests, and this produced the fabulous story among the Greeks, of Œdipus.

If we look for the origin of our Architecture, we shall also find it to proceed from the Egyptian. Their pillars are our columns, taken from their palms; and our orders (the capitals) are its branches, which arise from the top; sometimes the Lotos, in forming even the column, appears; and in ornamenting their walls and ceiling the Lotos has the principal share. However staggering, what is with us called the *Rose*, is the Lotos; and our *honeysuckle* is the infant plantule of the Lotos arising from its matrix, or seed-vessel. Sonnini, p. 592 of his Travels, mistook this representation in the temple of Dendera, " for that of a *proliferous* flower, which he could not account for." " The Egyptians," says Delile, Member of the Egyptian Institute, " not unfrequently represent the leaves of the Lotos of the same size as the flowers, although they are much larger, and omit the marks of indentation; but I once saw at Latopolis the Lotos represented with indented leaves. The seed-vessel of the white and blue Lotos may be also distinguished in some of the Egyptian sculptures."

In the ' Memoirs de l'Academie des Inscriptions, et Belles Lettres, anno 1790,' he also mentions, " that Barthelemy describes a very ancient Egyptian mosaic, representing the flowers, seed-vessel, and leaves of the Nelumbium, very correctly performed, of which a painting has been made by Bartholi in exactly the same colours, as may be seen in the library of the Pantheon, where it is deposited."

In the sculptures of the representations of religious ceremonies, the priests are seen holding in their hands the Nelumbium when approaching the Idol, as do their servants, who are usually represented behind, having the tail of a monkey, to shew, I suspect, degradation. All the Nymphæas, as furnishing food, were equally held sacred. Vide our Notes on the Nymphæa Cœrulea.

* Lama is the sovereign pontiff, or rather God, of the Asiatic Tartars, inhabiting the country of Barantola. The lama is not only adored by the inhabitants of the country, but also by the kings of Tartary, who send him rich presents, and go in pilgrimage to pay him adoration, calling him *lama congiu*, i. e. " God, the everlasting father of heaven." He is never to be seen but in a secret place of his palace, amidst a great number of lamps, sitting cross-legged upon a cushion, and adorned all over with gold and precious stones; where at a distance they prostrate themselves before him, it not being lawful for any to kiss even his feet. He is called the *great lama*, or *lama of lamas*; that is " God of Gods." The orthodox opinion is, that when the grand lama seems to die either of old age or infirmity, his soul in fact only quits a crazy habitation to look for another younger or better; and it is discovered again in the body of some child, by certain tokens known only to the lamas or priests, in which order he always appears.

A long account of the ceremonies attending the inauguration of the *infant lama* in Thibet, may be seen in the first volume of the *Asiatic Researches*.

† An account of *Brahma* is given in a note to the *Canna Indica*, and of his marriage with *Maia* in our history of the *Blue Lotos*. This god is seated on the flat surface of the seed-vessel of the Nelumbium, in the same manner as Osiris is represented in Egyptian sculpture, holding a whip in his hand, which denoted his driving the chariot of the sun. In other sculptures, where he is represented as the god of the sun, he drives twelve horses in hand, which are certainly meant for the twelve signs of the zodiac, which symbols the more refined Greeks have lost in their more elegant representation of Phœbus.

‡ One of the most remarkable innovators in the religion of the Brahmins was *Buddha*, who is generally supposed to be the *Fo* of the Chinese, the *Xaca* of Japan, and the *Odin* of the north of Europe. His worship prevails in India beyond the Ganges. He is the ninth avatar, or appearance of Vishnoo upon earth, and this is supposed to have happened in 1027 before Christ. A religion very similar to this is that of the *Lamas* of Thibet.

In the " Asiatic Researches" is a translation of a Sanscrit inscription on a stone at the entrance of a temple at *Boodha Gaya*, by Mr. Wilkins, as follows. " In the midst of a wild and dreadful forest, flourishing with trees of sweet-scented flowers, and abounding in fruits and roots, infested with lions and tigers, destitute of human society, and frequented by the *Moonees*, resided *Bood-dha*, the Author of Happiness, and a portion of *Narayan*. This Deity *Haree*, who is the Lord *Hareesa*, the possessor of all, appeared in this ocean of natural Beings at the close of the *Devapara*, and beginning of the *Kalee Yoog*. He who is omnipresent, and everlastingly to be contemplated, the Supreme Being, the Eternal One, the Divinity worthy to be adored by the most praise-worthy of mankind, and who appeared here with a portion of his divine nature.

For once upon a time the illustrious *Amara*, renowned amongst men, coming here, discovered the place of the Supreme Being, *Bood-dha*, in the great forest. The wise *Amara* endeavoured to render the God *Bood-dha* propitious by superior service; and he remained in the forest for the space of twelve years, feeding upon roots and fruits, and sleeping upon the bare earth; and he performed the vow of a *Moonee*, and was without transgression. He performed acts of severe mortification, for he was a man of infinite resolution, with a compassionate heart. One night he had a vision, and heard a voice saying, ' Name whatever boon thou wantest.' *Amara* having heard this, was astonished, and with due reverence he replied, ' First, give me a visitation, and then grant me such a boon.' He had another dream in the same night, and the voice said, ' How can there be any apparition in the *Kalee Yoog*? The same reward may be obtained from the sight of an image, or from the worship of an image, as may be derived from the immediate visitation of a deity.' Having heard this, he caused an image of the Supreme Spirit *Bood-dha* to be made, and he worshipped it, according to the law, with perfumes, incenses, and the like; and he thus glorified the

name

Where'er fair Science dawn'd on *Asia's* shore,
Where'er her hallow'd voice Devotion raised,
We see thee graven on the shining ore,
And on a thousand sparkling gems emblazed,

MAURICE.

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name of that Supreme Being, the incarnation of a portion of *Veshnoo:* 'Reverence be unto thee in the form of *Bood-dha!* Reverence be unto the Lord of the Earth? Reverence be unto thee, an incarnation of the Deity and the Eternal One! Reverence be unto thee, O God, in the form of the God of Mercy: the dispeller of pain and trouble, the Lord of all things, the Deity who overcometh the sins of the *Katee Yoog*, the Guardian of the Universe, the Emblem of mercy toward those who serve thee—*O'm!* the possessor of all things in vital form! Thou art *Brahma, Veshnoo,* and *Mahéa!* Thou art Lord of the Universe! Thou art, under the form of all things, moveable and immoveable, the possessor of the whole! and thus I adore thee. Reverence be unto the Bestower of Salvation, and *Resheekêsa*, the Ruler of the Faculties! Reverence be unto thee (*Kêsava*) the Destroyer of the Evil Spirit *Kêsee!* O, *Damordara*, shew me favour! Thou art he who resteth upon the face of the milky ocean, and who lieth upon the serpent *Sésá.* Thou art *Treeviekrama,* who at three strides encompassed the Earth! I adore thee, who art celebrated by a thousand names, and under various forms, in the shape of *Bood-dha,* the God of Mercy! Be propitious, O Most High God!'

"Having thus worshipped the Guardian of Mankind, he became like one of the just. He joyfully caused a holy temple to be built, of a wonderful construction, and therein were set up the divine foot of *Veshnoo,* for ever purifier of the sins of mankind, the images of the *Pandoos,* and of the descents of *Veshnoo:* and in like manner of *Brahma,* and the rest of the divinities.

"This place is renowned; and it is celebrated by the name of *Bood-dha Gaya.* The forefathers of him who shall perform the ceremony of the *Sradha* at this place shall obtain salvation.

"A crime of an hundred fold shall undoubtedly be expiated from a sight thereof, of a thousand fold from a touch thereof, and of a hundred thousand fold from worshipping thereof. But where is the use of saying so much of the great virtues of this place? Even the hosts of heaven worship it with joyful service both day and night."

Brahma, Vishnu, Surya, and *Ganesa,* are each seated upon the *Lotos*; and *Ganga* is painted walking on her own river, holding a *Lotos* in each hand. Vide Dissertation on the Gods of Greece, Italy, and India, in the Asiatic Researches, by Sir William Jones, Vol. I. p. 221.

Kæmpfer has given us a curious representation of the goddess *Quanwon* sitting upon this aquatic plant. In one part of his work he described her, as having *eight* little children placed round her head, six of whom formed a sort of crown, while the two others were larger than the rest, (Kæmpfer's Japan, p. 595.); and in another part of the same work, speaking of a different statue of the same goddess, he observes, that "*seven* smaller idols adorned her head, like a crown or garland, whereby is denoted, that she was *the happy mother of many a deified hero:* nay, *the Japanese look upon this idol, as an emblematical representation of the birth of the gods in general.* (Kæmpfer's Japan, p. 542.) BARROW remarks, in his account of the embassy, "that when the *Shing-moo,* or holy mother, is represented in Chinese temples, she generally holds a flower of the Nelumbium in her hand; and when sitting she is usually placed upon its large peltate leaf:" and proceeds to observe, p. 474, "that in China few temples are without some representation of the Nelumbium. Sometimes the *Shing-moo* is painted as standing upon its leaves in the middle of a lake;" and that in one temple he observed the intelligent mother seated upon its leaf, which had been hewn out of the living rock.

In the "*Songs of Jayadeva,*" the several kinds of Lotos are very frequently mentioned. "Thou, whose eyes sparkle as the *Blue Lotos* agitated by the breeze, and whose lips are as the *Red Lotos* in full bloom. Those beautiful blue eyes are become, through thy resentment, like the petals of the *Crimson Lotos:* Oh! tinge with their effulgence these my limbs reclining on a bed of soft *White Lotos leaves,* that they may glow like the arrows of Love pointed with flowers. My locks are decked with the *deep azure* of *Water Lilies,* my dress is a robe of *pale yellow,* which resembles the *golden dust* of the *Water Lily* scattered over its *blue petals.*" Vide *Asiatic Researches,* p. 185. In all Persian songs, DIPUC (*Cupid*) is represented as pointing his arrows with the petals of the *Red Lotos.*

Among the rites and ceremonies of the Hindus, a kind of religious Almanac translated by Sir William Jones, is the following passage. "On this lunar day SERESWATI, or ISA," (the *Isis* of the Egyptians), "the Goddess of Arts and Eloquence is to be worshipped with offerings of perfumes, flowers, and dressed rice. Even the implements of writing, and written books, are to be treated with reverence, and not used on this festival. This meditation is to be used. May SERESWATI, the Goddess of Speech, enable us to attain all possible felicity; she who wears on her locks a beautiful half moon, which shines with a pale, but exquisite lustre; whose body bends through the weight of her full breasts; who sits reclined on the *White Lotos*; and from the *Crimson Lotos*" (Lotos is used for *beauty*) "of her hands infuses radiance on the instruments of writing, and books produced through her favour." Vide *Asiatic Researches,* Vol. iii. p. 722.

TO THE LOTOS.

Cupid derives from thee his glowing fires,
And with thy radiant petals points his dart,
He fills the ardent soul with fond desires,
And softly steals upon the yielding heart.

Whatever grace can youthful beauty shew,
Whether the glitt'ring eye, or brow above,
From thee, the cheering thought is made to glow,
Thyself the agent of all-pow'rful love.

I cannot dismiss these *notes* without here testifying generally my obligations to the learned labours of the Rev. Mr. Maurice in his "*Indian Antiquities,*" a work of the greatest classical skill, profoundest research, and most elegant diction. Where the conjectures are my *own,* I have indeed inserted them with the utmost diffidence, trusting in the liberality and candour of my readers.

Henderson pinx.t *Hadfield sculp.t*

The Blue Egyptian Water-Lily.

Published Sept.r 11. 1807. by Dr. Thornton.

NYMPHÆA COERULEA;

OR,

BLUE EGYPTIAN WATER-LILY.

In our Picturesque Plate, we have introduced a distant view of Aboukir, and the waters of the Nile, where the *Blue Lotos* is found in great abundance, and which tends much to enliven the scene. As the flood subsides, its tuberous roots afford a nourishment nearly resembling our Potatoe, but more mealy. It has an exterior *calyx*, consisting of four green leaves, internally coloured blue; numerous *corolla* leaves, of the finest azure colour, a number of *stamina*, with yellow *filaments*, tipt with blue *anthers*, and an orbicular *pistillum*, crowned with a *stigma* radiated like our Poppy, and turning like it to a *pericarp* filled with innumerable small *seeds*. The leaves not being crenated, as with the *White Lotos* (Nymphæa Lotos), it more nearly corresponds with our common *White Lily*. It comes under the Class Polyandria, Order Monogynia, of Linnæus.

It was surely a most extraordinary sight, to observe the proud conqueror of Egypt presiding over a literary association to promote science, and most attentively listening to, and applauding a discourse read by *Julius Cæsar Savigni*,* on those *sacred* Nymphæas which embellish the shores of Egypt; little then did his arrogant soul imagine, that at that time on the buoyant wave was floating the thunder of the British arms, which Providence had destined to annihilate his proud army, and take from it its famed standard *impiously* called '*Invincible.*' Little then did HE dream, that a bloody† diadem would soon encircle his brow, and that he would feel never satiated with human honours, his mind becoming a dreadful prey to a cursed, a senseless, and wicked ambition.

TO THE BLUE LOTOS.

CHILD OF THE SUN! *why* droops thy withering head,
While high in Leo flames thy radiant sire;
With Egypt's glory is thy glory fled,
And with her genius quench'd thy native fire?—

Far direr than her desert's burning wind,
Gaul's furious legions sweep yon ravaged vale,
Death stalks before, grim famine howls behind,
And screams of horror load the tainted gale.

* Such are the pompous appellations the French assumed, as their *Christian* names, and it was ridiculous enough for a *pretended* republican to *usurp* the name of an *usurper!*

† The *needless* and *atrocious murder* of the Duke D'Enghien, by torch-light, in the Bois de Boulogne, appals every heart with horror!

Nile's crimson'd waves with blood polluted roll,
Her groves, her fanes, devouring fire consumes;
But mark! Slow rising near the distant pole,
A sudden splendour all her shores illumes!

Fatal to GAUL—'tis BRITAIN's rising star
That in the South the bright ascendant gains,
Resplendent as her Dog Star shines from far,
And with new fervour fires the Lybian plains.

A race, as Egypt's ancient warriors* brave,
For her insulted sons indignant glows,
Defies the tropic storm, the faithless wave,
And hurls destruction on their haughty foes.

Exulting to his source old NILUS hears
The deepening thunder of the *British* line†,
Again its lovely head the *Lotos* rears,
Again the fields in rainbow glories shine.

Still wider, beauteous plant, thy leaves extend,
Nor dread the eye of an admiring Muse,
In union with the rising song ascend,
Spread all thy charms, and all thy sweets diffuse.

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* The Egyptians were formerly a martial race, and the ancient city of Thebes so rich, that Achilles, in Homer, introduces the temptation of such an acquisition!

Not all proud *Thebes'* unrivall'd walls contain,
The world's *great Empress* on th' Ægyptian plain,
(That spreads her conquests o'er a *thousand* states,
And pours her heroes thro' an hundred gates,
Two hundred horsemen, and two hundred cars
From each wide portal issuing to the wars);
Tho' bribes were heap'd on bribes, in number more
Than dust in fields, or sands along the shore;
Should all these offers for my friendship call;
'Tis *he* that offers, and I scorn them all.
Atrides' daughter never shall be led
(An ill-match'd consort) to Achilles' bed;
Like golden Venus tho' she charm'd the heart,
And vy'd with Pallas in the works of art.
Some greater Greek let those high nuptials grace,
I hate alliance with a *tyrant's* race.

Strabo informs us, that the kings of Thebes extended their conquests even as far as Scythia, Bactria, and India.

† The account given by NELSON of his Naval Victory, deserves to be written in letters of gold, for the religious and manly spirit it breathes.

VANGUARD, off the Mouth of the Nile, August 3, 1798.

"MY LORD,

"ALMIGHTY GOD has blessed his Majesty's arms in the late battle by a great victory over the fleet of the enemy, whom I attacked at sun-set on the first of August off the Mouth of the Nile. The enemy were mored in a strong line of battle for defending the entrance of the Bay (of Shoals), flanked by numerous gun-boats, four frigates, and a battery of guns and mortars on an island in their van; but nothing could withstand the squadron your Lordship did me the honour to place under my command. Their high state of discipline is well known to you; and with the judgment of the captains, together with their valour, and that of the officers and men of every description, it was absolutely irresistible.

"Could any thing from my pen add to the character of the captains, I would write it with pleasure, but that is impossible.

"I have to regret the loss of Captain WESTCOTT, of the Majestic, who was killed early in the action; but the ship was continued to be so well fought by her first lieutenant, Mr. CUTHBERT, that I have given him an order to command her till your Lordship's pleasure is known.

"The

Of that bold race, beneath the Pleiads born,
To chaunt thy praise a Northern Bard aspires,
Nor with more ardour, erst at early dawn,
The Theban minstrels smote their votive lyres.

For oh! can climes th' excursive genius bound?
No. 'Mid Siberia bursts the heav'n-taught strain;
At either pole the Muses' songs resound,
And snows descend and whirlwinds rage in vain.

Four thousand summers have thy pride survey'd
Thy Pharaohs moulder in their marble tombs:
Oblivion's wing the pyramids shall shade,
But thy fair family unfading blooms!

Still 'mid these ruin'd towers, admir'd, rever'd,
Wave high thy foliage, and secure expand,
These vast but crumbling piles by men were rear'd,
But thou wert form'd by an immortal hand.

With NATURE's charms alone thy charms shall fade,
With being's self thy beauteous tribe decline;
Oh! living, may thy flow'rs my temples shade,
And decorate, when dead, my envied shrine.

MAURICE.

" The ships of the enemy, all but their two rear ships, are nearly dismasted: and those two, with two frigates, I am sorry to say, made their escape; nor was it, I assure you, in my power to prevent them. Captain HOOD most handsomely endeavoured to do it; but I had no ship in a condition to support the *Zealous*, and I was obliged to call her in.

" The support and assistance I have received from Captain BERRY cannot be sufficiently expressed; I was wounded in the head, and obliged to be carried off the deck, but the service suffered no loss by that event, Captain BERRY was fully equal to the important service then going on, and to him I must beg leave to refer you for every information relative to this victory. He will present you with the flag of the second in command, that of the commander in chief being burnt in the L'Orient.

" Herewith I transmit you lists of the killed and wounded, and the lines of battle of ourselves and the French.

" I have the honour to be, &c.

" HORATIO NELSON."

LINE OF BATTLE.

ENGLISH.

		Guns.	Men.
1. CULLODEN	Captain T. Troubridge	74	590
2. THESEUS	Captain R. W. Miller	74	590
3. ALEXANDER	Captain Alex. J. Ball	74	590
4. VANGUARD	Rear Admiral Sir HORATIO NELSON.. / Captain Edward Berry	74	595
5. MINOTAUR	Captain Thomas Louis	74	640
6. LEANDER	Captain T. B. Thompson	50	343
7. SWIFTSURE	Captain B. Hallowell	74	590
8. AUDACIOUS	Captain Davidge Gould	74	590
9. DEFENCE	Captain John Peyton	74	590
10. ZEALOUS	Captain Samuel Hood	74	590
11. ORION	Captain Sir James Saumarez	74	590
12. GOLIATH	Captain Thomas Foley	74	590
13. MAJESTIC	Captain G. B. Westcott	74	590
14. BELLEROPHON	Captain H. D. E. Darby	74	598
LA MUTINE, Brig			
		1012	8068

Officers, Seamen, and Marines, killed and wounded 895.

FRENCH.

			Guns.	Men.
1. LE GUERRIER		Taken	74	700
2. LE CONQUERANT		Taken	74	700
3. LE SPARTIATE		Taken	74	700
4. L'AQUILON		Taken	74	700
5. LE SOUVERAIN PEUPLE		Taken	74	700
6. LE FRANKLIN	*Blanquet*, 1st. Contre Amiral	Taken	80	800
7. L'ORIENT	BRUEYS, Admiral and Commander in Chief.	Burnt	120	1010
8. LE TONANT		Taken	80	800
9. L'HEUREUX		Taken	74	700
10. LE TIMOLEON		Burnt	74	700
11. LE MERCURE		Taken	74	700
12. LE GUILLAUME TELL	*Villeneuve*, 2d. Contre Amiral	Escaped	80	800
13. LE GENEREUX		Escaped	74	700
14. LA DIANE	Frigate	Escaped	48	300
15. LA JUSTICE	Ditto	Escaped	44	300
16. L'ARTEMISE	Ditto	Burnt	36	250
17. LA SERIEUSE		Dismasted and sunk	36	250
			1190	10810

To this triumph, not long after was added the famous BATTLE AT ABOUKIR, NEAR ALEXANDRIA, in which the brave ABERCROMBIE fell, after which the *French army* in Egypt surrendered to the *British*. In the Gazette account of this battle, Lord HUTCHINSON gives us an affecting account of the death of ABERCROMBIE. " Few more severe battles have been fought. We have sustained an irreparable loss in the person of our never-sufficiently to be lamented Commander in Chief, who was mortally wounded in this battle, and died March 28, 1801. I believe he was wounded early, but he concealed his situation from those about him, and continued in the field, giving his orders with that coolness and perspicuity, which had ever marked his character, till long after the action was over, when he fainted through loss of blood. Were it permitted for a *soldier* to regret any one who has fallen in the service of his country, I might be excused for lamenting him more than any other person; but it is some consolation to those who tenderly loved him, that as his life was honourable, so was his death glorious. His memory henceforth will be recorded in the annals of his country—will be sacred to every British soldier—and embalmed in the recollection of a grateful posterity."

It is taught in Eastern Mythology, which is the same nearly as the Egyptian, that MAIA, who was first created by *Brahma*, by whom in concert all other things were formed on the watery abyss, was seated on the *Blue Lotos*, and thus gently wafted to *Brahma*.

THE MARRIAGE OF BRAHMA AND MAIA,

AN EASTERN FABLE.

WHILE BRAHMA pensive on the *Lotos* lay
Warm'd by the bright orient beams of day,
Transporting visions in his fancy roll,
Creation rushes on his raptur'd soul,
Before his view the forms of beings move,
And all the Deity dissolves in love;
By one vast stretch of thought bright MAIA sprung,
MAIA, the wise, the blooming, and the young:—
On the *Blue Lotos* sat the beauteous Queen
Who look'd enchantment o'er the dazzling scene,
With out-stretch'd arms the Goddess seem'd to swim,
And mov'd alternate every pliant limb;
Now on the *Lotos'* velvet margin stood
And view'd her graceful image in the flood;
Amaz'd, she wonders at her form so bright,
Seen in the radiance of reflected light;
Down her fair neck, and o'er her bosom roll'd,
In sweetest negligence, her locks of gold;
Round her fine form the dim transparence play'd,
And shew'd the beauties, that it seem'd to shade:—
Wave after wave, the *Azure Lotos* bore
As though impatient for some destin'd shore,
Around the flower the fanning Zephyrs play
And speed the buoyant vessel on its way,
While gently thrilling thro' her raptur'd frame
With kindling life, shot Love's voluptuous flame.
The *God* and *Goddess* meet—With transport fired,
Delighted each the other's charms admired!
Enamour'd BRAHMA gaz'd with fond surprize,
And drank delicious passion from her eyes;
Marks her white neck beneath the gauze's fold,
Her ivory shoulders, and her locks of gold;
Drinks with mute ecstacy the transient glow;
Which warms and tints her bosom's rising snow;
Watches each nascent smile and fleeting grace,
The dimples playing in her blooming face;
Views the fine mazes of the curls, that break
Round her fair ear, and shade her damask cheek;

Drinks the pure fragrance of her breath, and sips
With tenderest touch the roses of her lips;
Invites her to partake his throne, his bed,
And binds the gemm'd Tiara round her head;—
And now, on fire, th' impatient Brahma press'd
The blooming Goddess to his fervent breast,
The conscious Fair betrays her soft alarms,
Sinks with warm blush into his clasping arms,
Yields to his fond caress with wanton play,
And sweet, reluctant, amorous delay.

Darwin.

The Blue Lotos, by affording to the inhabitants of Egypt,* from its root, and seed-vessel, a nutritious food, was properly considered by them as an *Emblem* of *Celestial Love.*

Where Nile's proud waves roll slowly to the main,
  Thro' the fam'd land that knows no falling shower,
In modest charms above the wat'ry plain
  All bright emerges the *mysterious flower.*

And while her guardian *sire* † with soft supplies
  Feeds the glad earth, and wakes her green-rob'd brood,
She meets the tincture of the answering skies,
  And spreads *cerulean lustre* o'er the flood.

Touch'd by the floating sapphire's starry vest,
  The hoary Sage to raise devotion strove;
And bade the beauteous blossom stand confess'd
  The *sacred symbol* of *celestial love.*

Hence, to the dim recesses of the fane
  He bears the gather'd sweets each rising morn:
From Isis' neck descends the flowery chain,
  And flowery wreaths Osiris' brows adorn.

'Benignant pair! to mortals still be good:
  Still let old Nilus feel your guiding power!
O'er our parch'd plains extend his fattening flood,
  And bear upon his breast your *sacred* flower!

'And while with pious care our trembling hand
  To Heaven's high praise this holy rite ordains,
Accept *these tributes* of a grateful land,
  And bless with fav'ring smiles th' Egyptian plains.'

Shaw.

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* The Lotos was equally sacred in Egypt as in India. Vide notes to the history of the Nelumbium.

† The Lotos is to this day called Arais del Nil, *Daughters of the Nile,* and *Nile* is derived from Nila, *blue*; and ποταμος, *potamos,* the Greek word for any large river, used also for the *Nile,* is derived from the Sanscrit word Padma, the name for the *Blue Lotos.*

APOLOGY TO MY SUBSCRIBERS.

IT was my original idea, had the times been *propitious,* to have greatly enlarged this part of the work, and presented the world with seventy PICTURESQUE BOTANICAL COLOURED PLATES, in which case another distribution of them would have been made, and *every class* illustrated by SELECT EXAMPLES of the *most interesting flowers,* accurately *described,* and immortalized by *poetry:* but during the progress of this *expensive* work, with the exception of a few months respite, infuriate *war* has constantly and violently raged, which, like a devouring conflagration, destroys every thing before it; commerce, agriculture, and *the Arts,* all the sources of public prosperity, and private happiness, are by it dried up and annihilated. The once *moderately rich* very justly now complain they are exhausted through *taxes* laid on them to pay armed men to diffuse *rapine, fire,* and *murder,* over *civilized* EUROPE. *One Monarch* dares, in the face of *that religion* which teaches *no difference among men,* to wage *universal* war only from motives of a cursed *ambition!* All kinds of crimes are now every hour accomplishing on the ensanguined theatre of cruel War! The earth is inundated with human blood! The man of sensibility, his heart overwhelmed with grief, and shame, beholds such *atrocious scenes* with *horror!* There is no counterpart in NATURE to compare with *such Men.* TYGERS do not even gorge themselves with the blood of TYGERS!

.....parcit
Cognatis maculis similis fera.....

JUVENAL.

O that *Kings* and *Princes* of the earth, would hear the voice of exalted Reason, and learn WISDOM!

TRUE GLORY DOES NOT CONSIST IN EXTENT OF DOMINION, BUT IN THE PROSPERITY AND HAPPINESS OF ANY GIVEN NUMBER OF SUBJECTS:

Under the present pressure of calamitous circumstances, it would be wrong for me to trespass any longer upon the purses of a *public-spirited* body of subscribers, *most* of whom would, I am certain, generously have acquiesced in my *original more extensive scheme,* even in these *awful* times; yet *some few* might have *seriously felt* the *additional price*; therefore, I trust, a candid and enlightened public, will *cheerfully* accept what I have been able to perform, and will at least allow me *this honour,* which is all I request,

EST QUODAM PRODIRE TENUS, SI NON DATUR ULTRÁ.

HORACE.

LINES

ADDRESSED TO

DOCTOR THORNTON,

ON HIS

BOTANIC GARDEN.

THORNTON, while polish'd Darwin tells
The loves of FLORA's gaudy train,
'Tis thine to guard from time's decay
The fading glories of her reign.

Thy GARDEN of perpetual bloom
No change of threatening skies can fear;
Nor dashing rains, nor chilling blasts,
Can reach the lovely fav'rites here.

Bright TULIPA in form as fair
As on the lap of Nature shines;
As gaily spreads each opening flow'r,
As soft each varying tint combines;

Whether in Asia's sun-bright soil
The Nymph her crimson chalice[b] rears,
Or mid Batavia's fost'ring clime[c]
In every added charm appears.

Here view august, in conscious pride,
AGAVE lift her standard high;
Swell in full pomp her cluster'd flowers,
Resolv'd to triumph ere she die.

There CEREA, rich in countless charms,
Spreads to the moon her golden ray;
Nor fears that, ere yon orb descends,
Each blooming grace should fade away.

Behold, in realms of endless spring,
MIMOSA's beauteous form arise;
While, circling round on festive wing,
The ruby-throated spoiler flies.

Here, floating to the evening air,
Fair PASSIFLORA scents the gale;
Expands her crowns of sapphire blue,
And softly waves her petals pale.

NATURE, well pleas'd at Art's success,
Each imitative grace shall see;
And FLORA with approving smile
Shall twine her choicest Wreaths for THEE.

DR. SHAW.

[a] Author of "THE LOVES OF THE PLANTS."

[b] Alluding to the CANNA INDICA.

[c] Alluding to the Group of HYACINTHS.

VERSES

ADDRESSED TO

DR. THORNTON,

ON THE COMPLETION OF HIS

TEMPLE OF FLORA, OR GARDEN OF NATURE.

Oh! Bards of Athens! for your classic rage,
Or Rubens' fire, to warm the kindling page;
Then like those vivid tints my Song should glow,
And Thornton's praise in noblest numbers flow;
Fervent as *his* should roll the breathing line,
The radiant colouring, and the rich design.

From *orient regions* where the *tropic ray*
Lights beauty's beams, and pours the glowing day,
To where th' *eternal snows* of *winter* spread,
And ice-clad mountains rear their lofty head,
Thy daring hand hath cull'd the loveliest flow'rs
To deck delighted *Albion's* happier bow'rs;
On each proud page in varied radiance bright,
The Muse exulting feasts her raptur'd sight;
For ever fresh those flow'rs; for ever fair!
The rage of *Envy* and of *Time* shall dare.
Around *thy* couch their branching tendrils wave,
And cast their fragrant shadows o'er *thy* grave.

Beneath the Pleiads, taught by *thee* to bloom,
While Fancy fondly drinks their rich perfume,
A second Paradise our senses greets,
And *Asia* wafts us all her world of sweets.

To Thornton loudly strike th' applausive string,
'Mid desert wastes who bids an Eden spring,
On canvass bids the glowing landscape rise,
Each plant fair blooming 'mid its native skies;
Whether dark clouds the angry heav'ns deform
Where round the *Cape* loud howls th' incessant storm;
Or Genius waving high her magic wand,
Bids all *Arabia's* purple blooms expand;

Or pours the *Ganges* thro' the wide spread plain,
In foaming torrents rushing to the main.
By *thee* transported from the *farthest pole*
Where the slow Bears their frozen circuit roll
We tread the *region* parch'd by Sirius' ray,
Where the bright *Lotos* basks in floods of day;
Or pensive wander by *Columbian* streams,
Where everlasting summer pours its beams;
Along her vast but rich savannas rove,
Or trace the mazes of the boundless grove,
Where thousand birds their painted plumes unfold,
And crests that blaze with azure and with gold;
Where Nature's pencil lights her brightest dies,
And all *Brazilia* flames before our eyes.

Though, o'er her head the southern whirlwind rave,
Secure, behold! superb *Strelitzia* wave;
While amidst barren rocks and arctic snows
Fair *Kalmia* in refulgent beauty glows:—
Lo! *Cereus* faithful to th' appointed hour,
With glory's beams illumes the midnight hour;
Ah fleeting beams! ere Phœbus darts his rays,
Wither'd thy beauty, and extinct its blaze!
Not so yon *Aloe,* on whose tow'ring head
An hundred years their fost'ring dews have shed;
Not so the *Glories* that these leaves illume,
Whose splendid tints for centuries shall bloom!

Fain would the Muse *each* beauteous Plant rehearse,
And sing their glories in immortal verse;
But who shall paint them with a pow'r like *thine,*
'Tis in *thy* page those glories brightest shine!—
So lovely in their form, so bright their hue,
And in such dazzling groups they charm the view!
The Muse astonish'd drops her feeble lyre,
And baffled Art gives way to Nature's fire;—
That fire is *thine*—in every leaf it burns,
And imitation's noblest efforts spurns.
The mighty Work complete, through ALBION's bounds
Thy name is echoed, and *thy* fame resounds;
Exulting Science weaves the deathless bays,
And rival Monarchs swell the note of Praise.

Maurice.

FLORA JEALOUS.

TO

DR. THORNTON,

ON RECEIVING A PRESENT OF SOME BEAUTIFULLY PAINTED PLANTS FROM

HIS TEMPLE OF FLORA,

TO DECORATE

"THE POET'S COTTAGE."

O FOR some bow'ry nook, 'midst Nature's scenes
Of purest blossoms and unsullied greens;
A still, small, HOME that I may call my own,
My joy, my pride, my palace, and my throne;
With yet a dinner, sav'd by frugal care,
A social platter for a friend to share!

Thus pray'd the Muse, a Poet's wish to crown.—
Upon a Poet's wish no Muse can frown!
The pray'r was heard; and soon, by Fancy's aid,
A nook was chosen, and a Cot was made.
Streams, groves, and gardens, deck'd the smiling bound—
A Paradise of sweets—on Fairy ground.

Quick, Friendship came, with Fortune at his side,
To realize the Song and Poet's pride,
A bow'ry nook was *given*,* 'midst Nature's scenes
Of purest blossoms and unsullied greens.

---

* Mr. Pratt, the admired author of "*Sympathy*," and other well known poems, excited from his works such lively interest, that, as a *subscription* to his last production, "*Harvest Home*," a noble-minded stranger sent him the title deeds of a Cottage, with a piece of ground attached to it, near to his own domain.

"ACCEPT," a generous stranger said,—
Touch'd by the pages he had read,
"Accept, since you at length have found
Joy-giving Health on Hampshire ground;
Hampshire, where Health delights to reign,
The Goddess of the Wood and Plain:
Accept a little sylvan spot,
Where you may build your Poet's Cot:
Nay where, already cut and dried,
A river running close beside,
With valley low and mountain high,
And many a capability,
A Cot you'll find, which little care
And no great cost may soon repair:
That Cot is yours, and garden ground;
And all the pleasant scene around."

From p. 104 of HARVEST HOME.

My *Subscription* was as one *author* to *another*, which produced *unsolicited* the present *Panegyric* on an humble first attempt to raise a TEMPLE TO FLORA—by a GARDEN OF NATURE.

Compact

Compact the spot, it prov'd her happiest pow'r;
She knew 'twas good, and bless'd each opening flower.

See! who that loves from Jealousy is free?
Flora now felt it—tho' a Goddess she.
All " out of doors" she eyed with fond delight;
(For all her fragrant children were in sight:)—
Her *Pink,* her *Rose,* her *Hyacinths* were there,
Shedding delightful odours through the air.

Touch'd by the sweet enchantment of the scene,
She deign'd a visit to the charms *within:*
The Cot she enter'd; there beheld her flowers,
Tho' cropt, still breathing all her balmy powers:
Lovely 'midst thorns her *Brier,* and *Roses* gay,
And many a petal charming in decay.

Yet as around she cast her raptur'd eye,
Bright'ning the walls, she saw a fresh supply:
Some gifts of yesterday began to fade,
But sweets new-pluck'd were blooming in their stead.
" All these," she cried, " are mine; and this fair spot
" Shall henceforth boast the name of Flora's Cot.
" This *Renealmia,* this lov'd *Snowdrop* too,
" Display my magic Touch and matchless Hue;
" This tender *Sensitive,* this *Aloe,* sweet,
" *Cereus* and *Cyclamen* all Art defeat.
" Yes, mine are all the lovely train I see,—
" Unrivall'd Flora's beauteous Family."

Self-charm'd she paus'd,—but soon, advancing near,
Art's pow'rful Magic on the Walls appear;
Another Flora seems to breathe and glow,
Lotus unfold, and love-sick *Kalmia* blow.
The Goddess gaz'd, and mad'ning with the smart,
Felt the fierce anguish of a Jealous Heart.

" And shall a mortal Pencil thus presume,"
She cried, " to emulate my heav'nly Bloom?
" Shall my own offspring thus untimely die,
" And Art's frail progeny thus flourish nigh?
" Shall these erect a Temple of their own,
" And I ascend a poor divided Throne?
" Forbid it Nature!——" Nature rose to view:
To meet whose arms the angry Goddess flew:
Then told her tale, then pointed to the flowers
Whereon proud Art had lavish'd all her powers:
Till more indignant, as she more survey'd
The imitation nice of light and shade,

Th' unfolding leaf, the soft bud newly burst,
A second FLORA vieing with the first.
" These!" she exclaim'd,—" these flowers should be mine.
" Taken, O NATURE, from thy holy shrine:
" I, only I, should such rich tints bestow,
" I, only I, should give that kindling glow.

" Hold!" said the Sister-Goddess,—" the desire
" Thus to paint the charms which we inspire,
" Demands our *praise*—'tis incense at our shrine,
" And Art but proves our Empire more divine.
" Art's noblest effort but *makes known* our Fame;
" Different our realms, our Worship is the same,
" To both does *heav'n-born Genius* bend the knee!"
Then FLORA smil'd, and all was Harmony.

PRATT.

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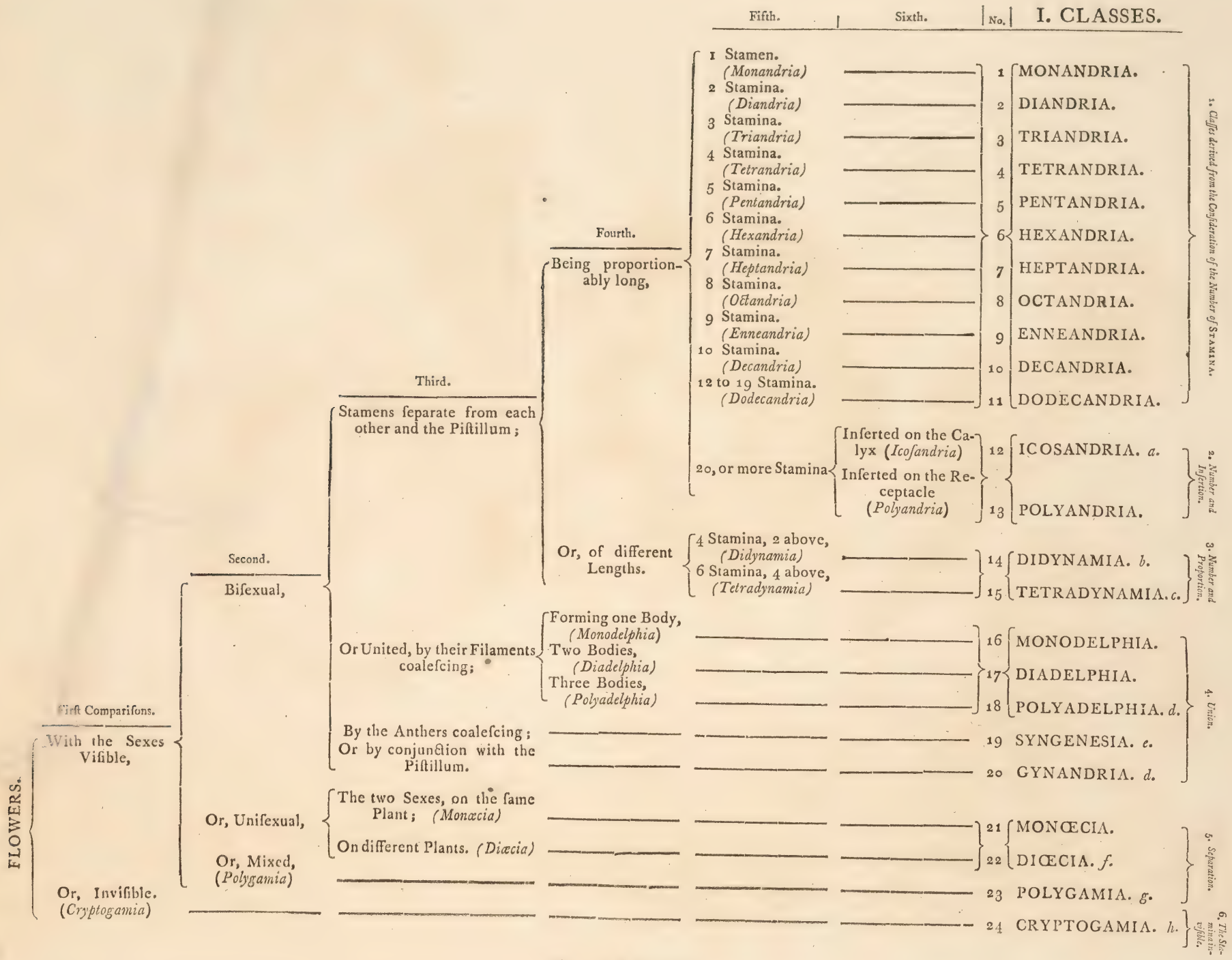
Tomkins fec. *Vincent sin.*

Reinagle Senr. A. pinxt. — R. Cooper sculpt.

Pitcher Plant.

London Published by Dr. Thornton Nov. 1. 1803.

ANALYSIS OF THE SEXUAL SYSTEM OF LINNÆUS.



II. ORDERS.

a. I. The ORDERS of the first 13 CLASSES, are taken from the number of Pistilla, and terminate in *gynia*, as the Classes did in *andria*, with the Greek numerals preceding; thus Order I. is MONOGYNIA, one Pistillum, Order II. DIGYNIA, two Pistilla, and so on, TRIGYNIA, 3, TETRAGYNIA, 4, PENTAGYNIA, 5, HEXAGYNIA, 6, HEPTAGYNIA, 7, OCTOGYNIA, 8, ENNEAGYNIA, 9, DECAGYNIA, 10, DODECAGYNIA, 12, POLYGYNIA, many.

b. II. Class 14, DIDYNAMIA, has the Orders I. GYMNOSPERMIA, naked seeds, and Order II. ANGIOSPERMIA, covered seeds (seeds in a capsule).

c. III. Class 15, TETRADYNAMIA, has two Orders taken from the shape of the pod, I. SILICULOSA, pod a *silicle*, broader than long, and II. SILIQUOSA, pod a *silique*, pod longer than broad.

d. IV. Class 16, 17, 18, 20, MONODELPHIA, DIADELPHIA, POLYADELPHIA, and GYNANDRIA, has its Orders taken from the number of *Anthers*; hence Order I. is MONANDRIA, one Stamen, Order II. DIANDRIA, and so on to ICOSANDRIA, for the pistillum can furnish no comparison to form the division in the classes enumerated above.

e. V. Class 19, SYNGENESIA, has its orders chiefly taken from the nature of the florets, which are *bisexual*, or *unisexual*, or *neuter*, and according as these are found in the flower, produce the several Orders. As the Comparison is not so easy here, as in the other Orders, we shall form these into a regular ANALYSIS.

ORDERS.

- Flowers compound.
  - Included in a common Calyx, each Floret having no Calyx of its own.
    - All the Florets alike. — I. POLYGAMIA ÆQUALIS.
    - Florets diversified.
      - Bisexual, perfect in the disk.
        - Pistil-flowers in the ray perfect. — II. POLYGAMIA SUPERFLUA.
        - Pistil-flowers in the ray imperfect (no Stigma). — III. POLYGAMIA FRUSTRANEA.
      - Bisexual, imperfect in the disk (no Stigma to the Pistillum.) — Pistil-flowers in the ray perfect. — IV. POLYGAMIA NECESSARIA.
  - Each Floret, besides the common Calyx, has a Calyx peculiar to itself. — V. POLYGAMIA SEGREGATA.
- Not compound, but having the classical character. — VI. MONOGAMIA.

f. VI. Class. Class 21, 22, MONŒCIA, DIŒCIA, take their Orders from the number, or other peculiarities of the Stamina, as HEPTANDRIA seven Stamina, POLYANDRIA more than seven, then comes MONODELPHIA, SYNGENESIA, GYNANDRIA, for as we descend with the classes, they overcome, or have the pre-eminence of those above them; thus if a plant is both *dioicous* and *gynandrous* also, it comes under the Class DIŒCIA, and the Order GYNANDRIA.

g. VI. So in POLYGAMIA, Class 23, we have the Orders I. MONŒCIA, II. DIŒCIA, and III. TRIŒCIA.

h. VII. Class 24, CRYPTOGAMIA, has four Orders: I. FILICES, Ferns; II. MUSCI, Mosses; III. ALGÆ, Sea-Weeds; IV. FUNGI, Funguses.

In the REFORMED SYSTEM the Classes are simplified by making them according to the Number of Stamina, and from taking all the Orders from the peculiarities of the Pistilla; and hence the 13th to the 23d Class are now reduced into the other Classes or Orders. Class 13 of the REFORMED SYSTEM is therefore the CRYPTOGAMIA of Linnæus.

London, published by Dr. Thornton, February 1, 1802, as the Act directs.

New Illustration of the Sexual System of ...Linnaeus
Thornton, Robert
1807
Missouri Botanical Garden
St. Louis, MO

CONDITION ON RECEIPT:
The full leather laced-in binding was very worn. The leather was powdery despite heavy oiling. Parts of the finish side of the leather were missing from the boards and spine. The leather was lifting in places. The joints had been crudely repaired. The board attachment was strong. The corners were fully exposed. The endbands were missing. Endleaves that matched the pastedowns were loose in the volume. They were smaller than the text block. The sewing was oversewn. Most of the pages were dirty and discolored. Some pages had tears at the edges. Others were chipped at the edges. The leaf facing the plate to be exhibited had many small edge tears. The paper was probably brittle at the edges. The oversewing created physical stress close to the spine when the volume was used. A text leaf that was smaller than the text block was loose in the back of the volume.

TREATMENT REPORT:
Treatment was documented with color slides. The volume was collated and disbound retaining the original sewing. The head, tail, and pages were dry cleaned where necessary. Tears were mended and folds guarded where necessary with Japanese kozo paper and wheat starch paste. A loose text leaf was incorporated into the text block. The sewing was reinforced. Handmade paper endsheets with linen hinges were attached. The volume was bound in full cloth using a split board structure and titled using a gold-stamped leather label. The previous binding was housed in a phase box

Northeast Document Conservation Center
February 2003
DW/MPB

THORNTON'S
NEW
ILLUSTRATED
SEXUAL
SYSTEM
OF
LINNAEUS

Spine

Top

Foot

Fore